Textile World
SEPTEMBER, 1959
A McGRAW-HILL PUBLICATION

MAN-MADE FIBERS AND YARNS

1959

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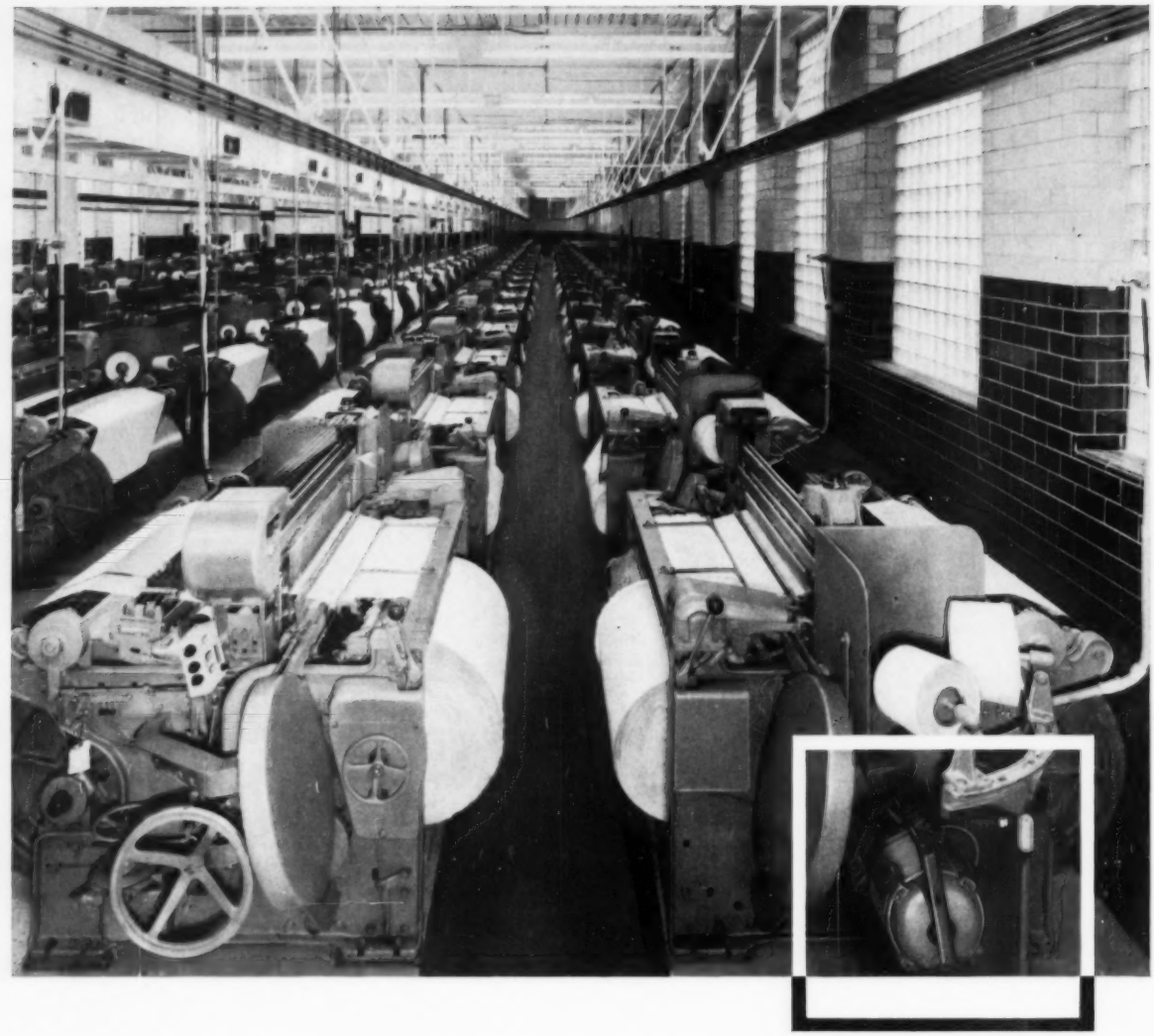

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Mill Production Hits Six-Year High

Mill production sprang back from the July holidays last month and came within striking distance of the highest point since the Korean War. Activity hit 119 (1954 = 100) on TEXTILE WORLD'S Index chart (p. 10), two points below the May 1953 high of 121 and two points above the 1955 high of 117 made in November and December 1955.

Present commitments are almost certain to carry production well above the 1953 high this fall. The 1953 high was only about 4% under the 129 Index point reached at the height of mill activity during the Korean War.

●

• Sales

Mill sales in the Latest Month (June) listed under Monthly Indicators on p. 10 rose to $1,314-million, an annual rate of $15,768-million, 28% above a year ago and the second month in a row that sales volume topped the $15-billion annual rate.

Many mills were signed up as far ahead as they were willing to commit themselves, and complaints rose in the market from buyers that they could not buy what they wanted and from salesmen that they had no goods to sell.

The feeling was general that this time the business "spurt" has some lasting qualities missing in all of the upsurges since 1951.

"It's different this time," a vice president of one of the largest mill groups said. "It looks like it's going to last for a while."

●

• Inventories

Mill inventories in the Latest Month (June) rose slightly, from $2,487-million the preceding month to $2,505-million; and the inventories-to-sales ratio rose slightly, from 1.90 to 1.91.

But inventories were under the same month a year ago ($2,505-million vs. $2,572-million), and the inventories-to-sales ratio was considerably under the 2.51 registered in June last year.

Nobody knows exactly what the ratio should be. The Latest Month 1.91 is low enough to keep upward pressure on prices. The 2.51 of a year ago is high enough to exert downward pressure on prices. A balance probably lies about midway between the 1.91 and 2.51.

So the ratio should be able to creep above 2.00 without creating any real downward price pressure.

●

• Exports—Imports

Textile exports continued to dwindle, dropping from $87.2-million in the Previous Month to $78.6-million in the Latest Month.

That placed Latest Month (June) exports 26% below the year-ago exports of $106.1-million.

The $78.6-million exports is an annual rate of $943.2-million, 5.9% of total mill sales.

Imports dropped also, from $107.3-million to $101.4-million.

Nylon vs. Rayon Flares High Again

Competition between nylon and rayon for the vast tire-cord market flared again last month.

After simmering quietly for a year or more—since Detroit turned thumbs down on nylon for new passenger cars because of "flat spotting"—the tug-of-war sprang up again last month when Du Pont sharply cut the price of nylon cord and other producers followed suit.

The 840-den. cord was cut from $1.20 a lb. to $1.06 and the recently introduced 720-den. from $1.23 to $1.09.

Because less nylon is used in a tire than rayon (Tyrex), the new price cuts eliminated most of the price advantage rayon had.

But cord price has nothing to do with "flat spotting," and bumping tires don't help new-car sales. So the nylon producers may still have trouble capturing the new-car tire market.

Burlington Increases Second-Quarter Dividend

Burlington Industries increased its dividend to common-stock holders for the second quarter. In the first quarter, Burlington paid a dividend of 25¢. For the second quarter, the dividend per share was increased to 30¢.

The total of 55¢ per share for six months is the highest rate Burlington has paid in dividends since 1951. If the 30¢ is maintained in the last two quarters, the 1959 pay-out will be $1.15.

Burlington's 12-months dividends in late years have been:

1958...	75¢
1957...	90¢
1956...	$1.00
1955...	64¢ (plus 10% stock)
1954...	55¢
1953...	64¢
1952...	99¢
1951...	$1.23

5% Stock Dividend To Be Paid by Textiles-Inc.

Textiles - Incorporated announced last month that it will issue a 5% stock dividend on Sept. 30 to holders of record Aug. 22.

No fractional shares will be issued.

But they were considerably ahead of year-ago imports of $66.0-million.

At an annual rate of $1,216.8-million, imports in the Latest Month ran 7.7% of total mill sales.

●

How long the present textile "boom" will last is beginning to bother more and more textile men.

Textile-cycle students are now expecting a dip early next year, with the downturn beginning in December or January.

A reasonable estimate seems to be that a "wearing away" will occur in the first half of 1960, with a bottom in July at about the same level as July 1959. That would mean that the two-year cyclical drop early next year would do no more than wipe out this fall's rise.

That would not be enough to create downward price pressure or reduce mill profits significantly.

Business Improves For Machinery Builders

Textile-machinery manufacturers are riding the best wave of business they've had in several years.

With capital-equipment buying by mills of necessity tied closely to mill profits and tax amortization, the 1959 mill-profits improvement (p. 6) has now carried back to basic-machinery manufacturers.

Some manufacturers report . . .

. . . "the best order backlog we've had in years."

. . . "orders coming in at the fastest rate in 10 years."

. . . "capacity booked nearly a year ahead."

●

A check with some of the larger manufacturers of capital textile equipment turned up these results:

• Crompton & Knowles

The backlog of orders for new looms is the best at C&K that it's been in several years. Orders now come in for 100 or more looms at a time instead of 10 or 20 at a time as in the past few years.

The new push-button loom, the C-7, shown for the first time at the 1958 Greenville Show, is C&K's best seller in the U. S. right now.

The F-2 papermakers'-felt loom has been going well for several months, and both C&K's gang and needle narrow-fabrics looms have now begun to move at a satisfactory rate.

●

• Draper Corp.

Sales in the first six months of this year ran 22% ahead of the same period last year. Profits showed a much greater improvement. Net earnings amounted to $796,747 in the first half of this year, equal to 71¢ a share of common stock. That's slightly more than the company earned in the whole 12 months of 1958.

With orders pouring in for its new shuttleless loom and orders for conventional looms improving, Draper expects its present rate of production to hold at least throughout 1959.

●

• Roberts Co.

The biggest backlog in this company's history is now on the books; and the current fiscal half-year, June 1-Nov. 31, will turn in the biggest sales volume the company has had.

Deliveries are spread over all types of equipment; and in pressing cases, delivery can still be made in 10 to 12 weeks.

Mill emphasis is now on new equipment, where until this year it was more on rebuilt equipment. In particular, new spinning represents the company's main 1959 deliveries.

●

• Saco-Lowell

Saco-Lowell, hit by a reorganization and a major move from Biddeford, Me., to Easley, S. C., plus loss operations for several quarters, expects to turn the corner this fall.

In a report to stockholders, Thomas J. Ault, president, stated that the rate of loss ($2,119,336) in the first half will be reduced in the third quarter and that the company will return to profitable operations in the fourth quarter.

Saco-Lowell's order backlog was reported as at "the highest level in many years."

●

• Universal Winding

Production of the Unifil winder hit the rate of 2,000 units a month in July; but because of the vacation shutdown in July, the full monthly capacity was not turned out until last month.

The backlog of orders now has production sold out through the first quarter of next year, but orders are being booked for delivery in the second quarter of next year.

●

• Whitin

Order backlog is substantial, for the first time since the Korean War. Production has stepped up so much that employment has risen from 3,200 to 4,400. At the rate orders are coming in, delivery may soon have to be extended somewhat.

By types of cotton machinery, business is excellent in roving and spinning; good in drawing; and fair in opening, picking, and twisting.

In woolen and worsted equipment, business is up about in proportion to cotton equipment, with woolen-machinery demand high and still rising and worsted high but leveling off.

Whitin expects deliveries to continue at about the present high rate through the rest of this year and the first half of next year.

●

How long the good business will last depends, of course, on how mills fare and how long profits hold up. Machinery manufacturers generally expect little letdown during 1960.

If, like mills, machinery manufacturers in general have their best year since 1951, shipments of new machinery and parts this year should return to somewhere near the $1½-billion level.

In cases where a fraction of a share will be due, the company will send a check for the value of the fractional share on the basis of $17 per share, the market value as of Aug. 13, the day the stock dividend was announced.

In addition to the stock payment Textiles-Inc. will pay a cash dividend of 15¢ a share on common stock and 25¢ a share on preferred stock.

Dates of payments will be Oct. 1 to preferred-stock holders and Sept. 10 to common-stock holders.

Acetate-Rayon Shipments Gain 23% Over 1958

Acetate yarn and rayon shipments amounted to 90.1-million lbs. in July, down 8% from June but 14% ahead of July 1958, the Textile Economics Bureau announced.

Of the 90.1-million lbs. total, 89.5-million lbs. went to the domestic market and 1.5-million lbs. to export.

Shipments for the first seven months of 1959 amounted to 655-million lbs., 23% above the 1958 seven-months shipments of 534.6-million lbs.

Mill Failures Down

Mill failures in July dropped to four failures with $713,000 liabilities, compared to 13 failures with $1,082,000 liabilities in July of last year, according to a report by Dun & Bradstreet.

That brought the totals for the first seven months of this year up to 36 failures with $4,371,000 liabilities, compared to 63 failures with $7,357,000 liabilities in the first seven months of 1958.

In percentages, failures this year ran only 57% as many as last year, with liabilities only 59% as high as last year.

Celanese Charges False Arnel Labeling

Celanese Corp. cracked down last month on a sportswear manufacturer for the illegal use of the Arnel trademark.

A restraining order was issued by the court against Katos Sportswear Co., 141 W. 36th Street, New York. Katos was accused of falsely labeling garments as containing Arnel.

Celanese filed a suit asking for a permanent injunction, an accounting for profits, and $100,000 in damages.

First-Half Business Up in Several Lines

First-half business improvements were reported last month in several textile areas.

• **Wool consumption** was reported up 36% above the first six months of 1958 by Woolens and Worsteds of America.

• **Production of men's suits** was 18% ahead of the first half of last year, sportcoats up 40%, topcoats and overcoats up 10%, and pants up 44%, the Clothing Manufacturers Assn. reported.

• **Hosiery shipments** were 10.9% higher in the first half of this year than in the same period last year, according to the Natl. Assn. of Hosiery Manufacturers.

Full-fashioned hosiery was down 5.7%, but seamless was up 29.6%.

Charleston Wool Imports Set a New Record

CHARLESTON — The Port of Charleston, S. C., set a new wool-imports record in the first half of this year. Wool imports hit 38,010,000 lbs. in the six-months period, 520,000 lbs. more than the 37,490,000 lbs. entering in the full 12 months of last year.

Supreme Court Rulings Hit by Textile Interests

Resistance to Supreme Court decisions in state tax matters flared up last month in several sections of the textile industry.

In two recent decisions — the Northwestern States Portland Cement case and the Stockham Valve case—the Court ruled that these two companies were liable for state income taxes on the income they earned by doing business in the states. Since normal interstate commerce was involved, the decisions raised the possibility that a textile mill or garment manufacturer might have to pay state income tax in every state where it sold goods. That could mean most or all of the 50 states.

Spartan Mills, the Underwear Institute, and other textile and garment interests opposed such burden-

Shipments in late years have been:

1958	not available
1957	$392 (million)
1956	407
1955	384
1954	304
1953	339
1952	368
1951	500

Manufacturers point out that the outmoded depreciation schedule for textile machinery is drastically penalizing the textile industry. The present schedule, set up during the 1930's, does not permit mills to write off equipment costs at anything like a rate to keep up with technological improvements.

1959 Mill Profits May Double 1958 Profits

Mill profits rolled in at a more satisfactory rate in the first half of this year than in any other year since the Korean War.

Seven companies, accounting for something like 12% of total industry sales, showed net profits of $28,676,268 in the first half of this year (Burlington Industries 9 mos., and Beaunit 3 mos.), compared to $14,584,403 in the same period last year. That's an increase of 100%. Net earnings amounted to 3.4% of sales, compared to 2.0% by the seven companies in the same 1958 period.

With total industry sales running about $15-billion this year, industry profits should run between $450-million and $500-million for the year.

•

That is a healthy improvement over late years. Industry profits have not hit that level since 1951.

The record for the intervening period shows:

	$-million	% of sales
1959	450 to 500 (est.)	3.0 to 3.5 (est.)
1958	212	1.6
1957	253	1.9
1956	342	2.6
1955	346	2.6
1954	114	0.9
1953	286	2.2
1952	264	1.9

Sales for the seven companies showed an 18% increase over the same period last year. They amounted to $838,709,247, compared to $706,175,687 in the same 1958 period.

A projection of sales by these seven companies indicates total-industry sales in 1959 of $15,480-million, very close to the $15,768-million actual rate in June, the latest month for which figures are available (see p. 3).

Operating statements for these seven companies showed these results:

	1959	1958
Amerace		
Sales (6 mos.)	$27,740,433	$22,406,847
Profit	1,373,430	1,349,241*
Net % of sales	4.9%	6.0%
Beaunit		
Sales (3 mos.)	$29,263,489	$20,339,468
Profit	1,719,199	374,634
Net % of sales	5.8	1.8
Bemis		
Sales (6 mos.)	$64,069,940	$57,684,820
Profit	1,313,038	1,148,812
Net % of sales	2.0	1.9
Burlington		
Sales (9 mos.)	$581,581,000	$485,126,000
Profit	18,310,000	7,816,000
Net % of sales	3.1	1.6
Dan River		
Sales (6 mos.)	$85,153,162	$79,642,822
Profit	2,650,270	2,281,684
Net % of sales	3.1	2.8
James Lees		
Sales (6 mos.)	$40,488,102	$30,822,194
Profit	2,616,285	947,156
Net % of sales	6.4	3.0
Roxbury Carpet		
Sales (6 mos.)	$10,383,121	$10,153,536
Profit	694,046	666,876**
Net % of sales	6.7	6.5
7 Companies		
Sales	$838,709,247	$706,175,687
Profit	28,676,268	14,584,403
Net % of sales	3.4%	2.0%

* Includes nonrecurring profit of $1.03 a share of a total profit of $2.13 a share.

** Includes nonrecurring profit of 58¢ per share of a total profit of $1.26 a share.

Fiber Producers' Profits Rose 188% in First Half

Man-made-fiber producers were in clover during the first half of this year. Four producers showed a collective improvement of 29% in sales over the first half of 1958 and a whopping 188% improvement in net profit. Profit as a percent of sales rose from 3.0% last year to 6.7% this year.

Highlights of the four performances were—

• **Industrial Rayon Corp.** showed a profit of $555,858, compared to a loss in the first half of 1958 of $1,092,316.

• **American Viscose Corp.** rose from a profit of $429,000, amounting to only 0.4% of sales last year, to a profit of $7,784,000, amounting to 6.0% of sales, this year.

some taxation and record-keeping before a meeting with the Senate Finance Committee.

1959 Cotton Program Gathers New Strength

Cotton was in the news in a big way last month.

• **The Dept. of Agriculture estimated this year's crop at 14,815,000 bales**—up 29% from the 11,512,000 of the 1958-59 crop. This bumper crop, coupled with the lower price-support levels in effect on the new crop, should, as cotton merchants say, "put cheaper cotton all over the place by the end of the year."

• **But the present short-supply of cotton,** particularly in lower grades, put pressure on the price of the new-crop ginnings that began to trickle into the market in late July and early August. Mills short of cotton in the face of surging mill production bid 2¢ to 3¢ a lb. above the government support price for the early ginnings.

•

In other moves, efforts were made to strengthen the position of cotton.

• Cotton spokesmen at a hearing before the House Agricultural Committee **recommended better use of cotton-acreage allotment.**

At present, acreage is allotted year after year whether or not a farmer uses it. A bill sponsored by Rep. Cooley (D-N. C.) provides that the farmer must plant his allotted cotton acreage, release it voluntarily but retain it for future use, or forfeit it.

The bill, supporters say, would stabilize cotton production and strengthen the acreage-allotment and marketing-quota system.

• **Cotton ginners from Arkansas and Missouri** added their weight to the already-strong forces petitioning Secy. of Agriculture Benson to restrict cotton-textile imports to protect the domestic-mills market of cotton farmers.

•

What all the activity boils down to is further evidence that the whole cotton program has firmly embarked on a new direction.

The policy of more and cheaper cotton, replacing the recent policy of less and higher cotton, seems well accepted. Also, the tug-of-war between cotton farming interests, traditionally exporters, and spinning

mills, traditionally protectionists, seems well on the way toward being resolved.

The forces getting the two groups together are threats.

The agricultural group now seems to be facing up to the threat of man-made fibers, and the spinning group is continuing its fight for its domestic market.

Together, the two groups constitute a powerful political force.

WORLD BRIEFS . . .

Courtaulds Makes Bid For Garment Manufacturer

LONDON—Courtaulds Ltd. is making a $6.6-million bid for Gossard (Holdings) Ltd., one of Britain's leading manufacturers of girdles and brassieres. Gossard directors have recommended acceptance of the offer.

Courtaulds' offer is $2 for each Gossard ordinary share worth 70¢.

Gossard will fit in well with the larger company's expansion program, Courtaulds says. Gossard has interests in Germany and South Africa where Courtaulds also operates.

In the last year and a half Courtaulds has acquired six new British companies and a joint interest in a pulp mill in Swaziland. The company's operations now range over a wide field, including packaging materials and paints, in addition to its main product, rayon.

•

India's Export Prospects Seem Increasingly Bright

NEW DELHI—Indian textile exports in 1959 are likely to be of the order of 750-million yds., compared to 600-million yds. last year.

This improvement, partly due to Government concessions and incentives, is reflected in the over-all export-trade figures for the first half of the current year, which stand at 556.5-million against $518.7-million during the same period in 1958. With higher shipments usual during the last six months, it is expected here that last year's total of $1,186,500,000 will be topped by this year's exports.

A contributing factor also is said

Here's how the four producers made out:

	1959	1958
American Viscose		
Sales	$126,710,000	$96,391,000
Profit	7,784,000	429,000
Net % of sales	6.0%	0.4%
Celanese		
Sales	$127,578,050	$103,787,203
Profit	10,445,088	5,701,345
Net % of sales	8.1%	5.4%
Owens-Corning Fiberglas		
Sales	$100,821,042	$77,486,605
Profit	7,239,118	4,083,806
Net % of sales	7.1%	5.2%
Industrial Rayon		
Sales	$31,149,749	$21,879,045
Profit	555,858 (loss)	1,092,316
Net % of sales	1.7%	(loss) 5.0%
4 Companies		
Sales	$386,258,841	$299,543,853
Profit	26,024,064	9,120,915
Net % of sales	6.7%	3.0%

Textile Stocks Follow Market's Wavering Pattern

NEW YORK—Textile stocks wavered with the spasmodic summer stock market up to the middle of last month. For the first time since the recession bottom in April of last year—16 months up to mid-August—the average of 16 textile issues listed on the New York Stock Exchange trailed along with the Dow-Jones Industrials Average.

For the three months mid-May to mid-August, the D-JI Average went from 620 to 658, a gain of 6.1%. In the same period, the 16 textile-issues average went from 27.4 to 29.2, a gain of 6.5%.

That represents the loss of a lot of steam by the textile issues. In the two-months period (mid-March to mid-May) prior to the poor summer performance, the textile-issues average rose 5.9%, compared to 1.6% for the D-JI Average.

•

Some individual issues did well in the uncertain summer months.

• **Burlington Industries** and **Reeves Bros.** each rose 33.3%, compared to the 6.5% of the 16-issues average.

• **Duplan,** a poor performer prior to the summer period, caught fire for a 27.2% gain in the last three months.

• **Bigelow-Sanford** and **Cone,** both rather sleepy during most of the big market rise, came awake for a 20% rise each during the summer.

But other issues didn't do so well.

Mojud, United Merchants, and **Van Raalte** wound up the three

months with no change; and **Cannon, James Lees,** and **J. P. Stevens** lost ground.

Performances for the three-summer-months period were:

	Mid-May	Mid-Aug.	Change
Am. Enka	36	41	+13.9 (%)
Am. Viscose	47	50	+ 6.4
Beaunit	22	25	+13.6
Bigelow-Sanford	15	18	+20.0
Burlington	18	24	+33.3
Cannon	65	64	— 1.5
Celanese	26*	31	+19.2
Cone	15	18	+20.0
Duplan	11	14	+27.2
Jas. Lees	50	43	—14.0
Mohasco	16	17	+ 6.2
Mojud	14	14	0
Reeves	18	24	+33.3
J. P. Stevens	30	29	— 3.3
United Merch.	20	20	0
Van Raalte	35	35	0
Average	27.4	29.2	+ 6.5%
Dow-Jones Industrials Avg.			+ 6.1%

*Adjusted for a 25% stock dividend paid in July

●

Twelve of the 16 issues gained 100% or more during the long market rise from April 1958, compared to only six with 100% or more gain prior to the summer months.

Five of the six big gainers by mid-May continued their gains during the summer: American Enka, Burlington, Celanese, Mohasco, and Reeves. But the summer loss of the sixth one, James Lees, cut its 16-months gain from 100% to 72%.

At mid-August, four issues had a 16-months gain of 200% or more, and a fifth one was only a little under 200%.

These five star performers and their gains in four periods tabulated during the 16 months were:

	1958 low to Mid-Oct.	Mid-Oct. to Mid-Mar.	Mid-Mar. to Mid-May	Mid-May to Mid-Aug.	Total Gain
Bigelow-Sanford	100 (%)	25 (%)	0 (%)	20 (%)	200 (%)
Celanese	91	30	13	19	244
Mohasco	150	50	6	6	325
Reeves	83	45	28	33	300
Am. Enka	71	29	13	13	192

Reeves Bros., although second to Mohasco in over-all gain, turned in the outstanding performance of the 16 issues.

Mohasco gained rapidly (150%) in the early months of the market rise, but its velocity of gain in the last two periods (covering five months) dwindled to the 16-stocks average.

But Reeves was outstanding in every period, with gains of 83%, 45%, 28%, and 33%—for the second-highest 16-months total of 300%.

Celanese and American Enka were second and third to Reeves as consistent gainers, with total gains of 244% and 192%.

to be the trade agreements concluded last year with several East European countries and the United Arab Republic.

A new agreement with Afghanistan is being negotiated, and Indo-Pakistan trade talks are expected to result in a mutual trade benefit in the immediate future. As a result of these agreements, the State Trading Corp. is said to be playing an increasingly significant role in export trade.

•

Soviets Claim New Carding Machine

VIENNA—A rapid-carding machine for cotton, geared to process 20 kilograms (roughly 44 lbs.) per hour, has been designed and a prototype built by the Leningrad Vulkan Machine Plant, the Russians announced late in July.

The machine is said to have three times the output of the British Platt card or the American Saco-Lowell card. The Russians say that one card of the Leningrad firm, able to process 12 kgs. (26.4 lbs.) of cotton per hour, was awarded a grand prize during the Brussels World Fair.

The new card is about 25% smaller than other Soviet cards and weighs about 800 kgs. (1,700 lbs.) less.

•

Venezuela Mill Installs Japanese Equipment

CARACAS—The first textile mill in Venezuela equipped exclusively with Japanese machinery is now being installed at La Victoria by Telares Capriles, C. A.

Equipment for the $1-million plant was built by the firm of Toyomenka. Japanese engineers are supervising installation.

The mill will make poplins from imported Japanese yarns. Eventually the company plans to set up its own yarn-making facilities.

•

Dutch-Mexican Combine To Build Nylon Plant

AMSTERDAM—A new plant will be built in Monterrey, Mexico, by a Dutch and Mexican combine to produce nylon 6 and 6,6. Algemene Kunstzijde Unie (AKU), Arnhem, Netherlands, parent company of the U. S. fiber producer, American Enka Corp., and Celulosa Y Derivados (CYDSA), Monterrey, Mexico, are undertaking the joint venture.

The first orders for machines and machine tools have been placed, and construction will start soon.

Index of manhours worked in the textile industry adjusted for changes in productivity

Textile World's Monthly Indicators

	Latest Month	Previous Month	Year Ago
Textile World's Index (1954=100)	**119***	**116**	**107**
Employment (thousands) B.L.S.	963.3	975.2	920.4
Production Workers (thousands) B.L.S.	871.5	883.0	830.2
Weekly Earnings B.L.S.	63.83	64.62	57.90
Hourly Earnings B.L.S.	1.58	1.58	1.50
Weekly Hours Worked B.L.S.	40.4	40.9	38.6
Production Index (1947-49=100) F.R.B.	113	117	86
Wholesale Price Index (1947-49=100) B.L.S.	95.2	94.9	93.3
Manufacturers' Sales (million $) Commerce	1,314**	1,310	1,025
Manufacturers' Inventories (million $) Commerce	2,505**	2,487	2,572
Inventories-to-Sales Ratio	1.91	1.90	2.51
Exports (million $) Commerce	78.6**	87.2	106.1
Imports (million $) Commerce	101.4**	107.3	66.0
Stock Price Index (1941-43=10) Standard & Poor's	33.23	30.26	21.13
Failures (number) Dun & Bradstreet	4	8	13

National Economic Indicators

	Latest Month	Previous Month	Year Ago
Industrial Production (1947-49=100) F.R.B.	153	155	134
Consumer Price Index (1947-49=100) B.L.S.	124.8	124.5	123.9
Wholesale Price Index (1947-49=100) B.L.S.	119.5	119.7	119.2
Population (millions) Census	174.6	174.4	171.4
Unemployment (millions) Census	3.7	4.0	5.3
Employment (millions) Census	67.6	67.3	65.2
Personal Income (billlion $) Commerce	384.1	383.8	363.5

* Estimate for August. ** June. July is Latest Month in all other cases.

266,000 Miles... a recent performance record achieved by a Draper Tru-Mold Shuttle. This shuttle was in continuous operation for over 20,800 hours and was still in running condition when removed from the loom. While these figures are impressive, they are even more amazing if we consider the number of times the shuttle was boxed and thrown. A quality shuttle coupled with proper care and handling make records of this type possible. For shuttles that last longer ... give better performance... use Draper Tru-Mold Shuttles.

DRAPER CORPORATION

HOPEDALE, MASS. • ATLANTA, GA. • GREENSBORO, N. C. • SPARTANBURG, S. C.

CIRCLE 11 ON READER SERVICE CARD

MORE THAN 3½ MILLION SPINDLES NOW EQUIPPED WITH ROBERTS HIGH DRAFT

ROBERTS SPINNING NEWS

PUBLISHED BY ROBERTS COMPANY SANFORD, NORTH CAROLINA

WM-2 SANFORD, NORTH CAROLINA, U. S. A. 1959

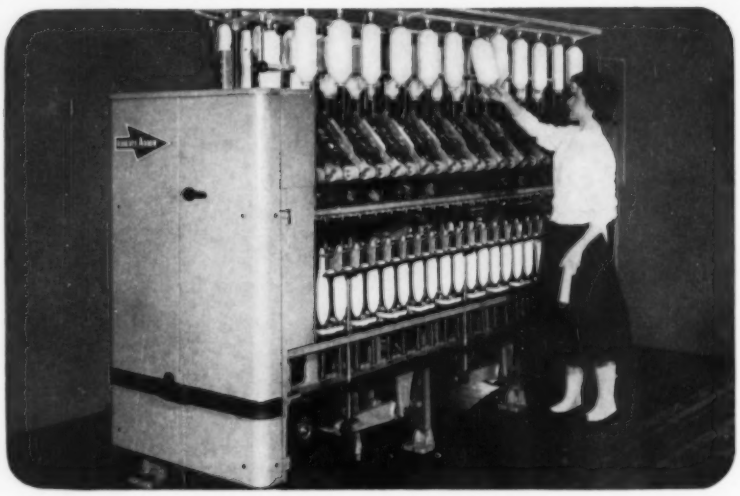
ARROW WM-2 LONG FIBER SPINNING FRAMES OFFER WIDEST YARN MAKING VERSATILITY

A dynamic program of new product design, advanced styling and aggressive merchandising is underway by all segments of the Textile Industry.

Knitting yarns of higher quality and greater interest are being called for in worsted, synthetics and blends. Finer weaving yarns up to 2 ply 80's are being called for and a great many blends are currently being explored. The longer fibers are in wide demand and the next few years should see a substantial boom in this field.

The demand for high bulk knitting yarns and the finer weaving yarns plus all of the newer fabric effects being created require fiber lengths from 3 to 8 inches long.

ARROW WM-2 frames are suitable for making yarns in any fiber length from 1½ to 8 inches. They provide great versatility in handling 100% synthetics, blends of synthetics, 100% worsteds and blends of worsted with synthetics in this range. Better quality yarns with greater evenness, bigger package sizes and higher production speeds are produced on ARROW frames.



- Spins yarn from any natural or synthetic fiber or any blend.
- PermaSet Drafting handles any fiber length from 1½ to 8 inches
- No roll setting changes needed at any time
- Great versatility for changing yarn numbers, twist, draft, ring size, and spindle speed
- Drafts as high as 24 on worsted, 60 on synthetic
- Produces yarn with better evenness and greater breaking strength
- Ball bearing top and bottom rolls eliminate all lubrication in drafting zone
- Almost ideal spinning conditions from delivery roll to spindle
- Runs at higher front roll, traveler and spindle speeds
- Reduces ends down by more than 50%
- Puts twice as much yarn on the bobbin as older frames
- 12-inch bobbins reduce winding costs
- Very rugged, most durable machine ever built for yarn spinning
- Frame is built in the wide-stance 36-inch width
- Uses ball bearings at every moving, turning or oscillating motion
- Substantially lowers electric power consumption
- AeroCreel for single or double roving
- Frame arranged for practical application of overhead cleaning and vacuum floor sweeping

Roberts ShortFlo System for Making Long Fiber Yarns

Roberts Company offers complete technical service in adapting its ShortFlo System for the production of long fiber yarns. This includes the complete yarn manufacturing process starting with tow converters, blending machines, pin drafting, roving frames, spinning frames, winders and twisters.

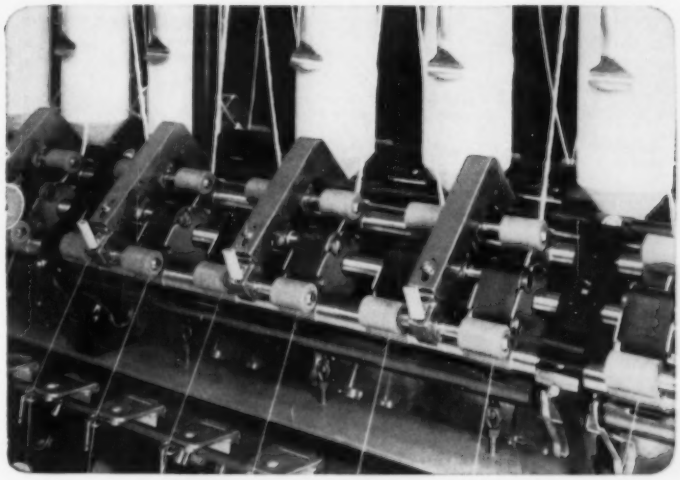
Where mills have existing equipment, full consideration is given to utilizing it whenever possible. Or, if a new long-fiber program is planned, all machinery can be specified, and the complete yarn organization set up.

The ShortFlo System for making long fiber yarns requires a minimum number of processes. Many doublings are provided to insure exceptionally good blending of fibers, improved evenness and better strength.

THE MOST SENSIBLE ANSWER TO GADGET-FREE TOP ROLL SUSPENSION

ROBERTS *PosiWate* SUSPENSION SYSTEM

PosiWate Ball Bearing Top Roll Suspension eliminates all cap bars and the need for top roll oiling. All three lines of top rolls have double-row ball bearings; heavier weighting can be handled when required. Weight distribution is positive. Hooks, short springs and other gadgets are not used. Roberts Ball Bearing Bottom Rolls with EvenGrip Fluting are also available.



A FEATURE OF

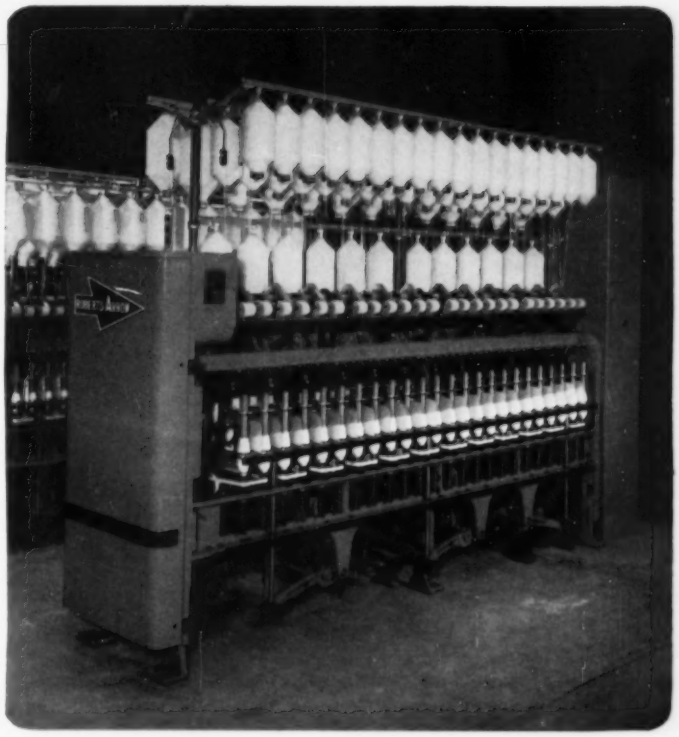
ROBERTS ARROW

MODEL M-1

and changeover modernization for any make of frame

ARROW M-1 SPINNING FRAMES

for cotton and for synthetics 1½ to 3¼ inches long



PosiWate Top Roll Suspension

UnaRing Balloon Control

EvenGrip Fluted Bottom Rolls

Roberts Supreme Ball Bearing Spindles

Double-Apron High Draft System

UnitVac Power-Suction Cleaning

Roberts All-Ball-Bearing Head

Unitized Sectional Frame

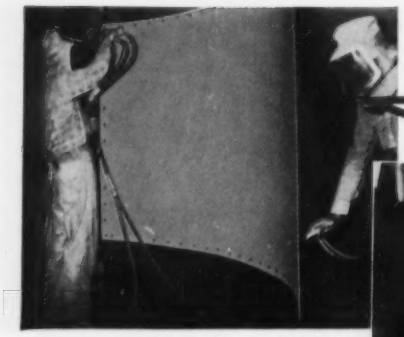
AeroCreel with Latch-Type Bobbin Holders

In Mexico, write direct to:

Roberts Co. de Mexico, S.A.
Avenida Reforma 915A
Puebla, Pue.

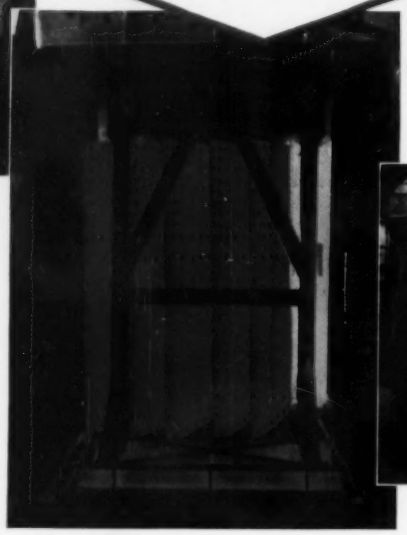
ROBERTS COMPANY

SANFORD, NORTH CAROLINA

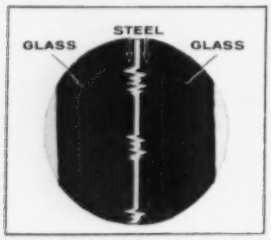


Spraying liquid glass slip on grit-blasted sheets.

this wedding of glass to steel...



Glass is fused to the steel at temperatures in excess of 1,600° F.



Microphoto shows how glass **permanently** fuses to steel. (Magnification: 150 diameters.)

Inspection of the finished sheet.

. . . guards your bulk materials with permanence of steel—purity of glass*

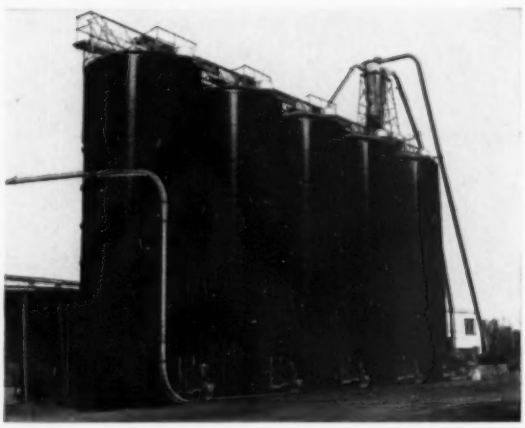
The permanent bonding of glass fused-to-steel *inside* and *out* —exclusive with Permaglas MECHANIZED STORAGE UNITS!

Think of it! A clean, gleaming coat of glass . . . permanently bonded to steel at temperatures in excess of 1,600° F., with bond strength up to 20,000 psi. This impervious glass has the same coefficient of expansion as steel itself . . . withstands weathering and abrading of bulk materials.

This *exclusive* feature of *Permaglas* Mechanized Storage Units makes possible sanitary, easy-to-clean bulk materials handling systems. Eliminates ravages of corrosion . . . deterioration of stored materials. Virtually ends maintenance costs! Another *exclusive* feature: Sweep-arm bottom unloaders completely mechanize bulk materials handling . . . cut labor costs as much as 67%.

Mail coupon today for full details on this new cost-saving way to process and store bulk materials.

*HYDRASTEEL—Process covered by U.S. Patent No. 2,754,222



Exclusive mechanical sweep-arm bottom unloaders, automatically discharge bulk materials into the conveying system in the Permaglas Storage Unit System shown above. Incoming bulk materials are top-loaded directly into the Permaglas Units.

Through research A.O. Smith *. . . a better way*

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Kankakee, Illinois

Please have Permaglas System Planning Service Representative call for appointment. Send me free Permaglas Mechanized Storage Unit Bulletin MU-100.

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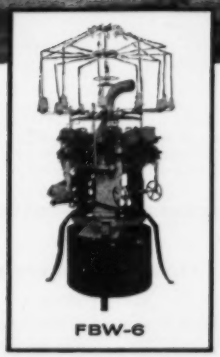
Title.....
Company.....
Address.....
City.....Zone...State.....



FBW-6

Knitted Elegance

"Elegant" . . . . . the only way to describe the luxurious coat fabrics produced on Wildman Jacquard "Hi-Pile" knitters. • *"Versatile"* best describes the capabilities of this unique machine. With a range of fabrics from glamorous outerwear to industrial coverings, the Wildman Jacquard "Hi-Pile" knitter is a sound investment. • For complete information write:

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VEEDER -ROOT COST-COUNTROL

all through your mill

From preparation to final inspection, Veeder-Root Counters help modern mills to Countrol production and costs . . . with accurate, up-to-the-minute figures on every process.

At the right are the most widely used profit-protectors in the Veeder-Root Textile Line. Let your Veeder-Root representative show you how little it will cost to equip your mill *completely* with these new counters. *Call him in today.*

Remember . . . *Men Who Count* are the men who count the profits.

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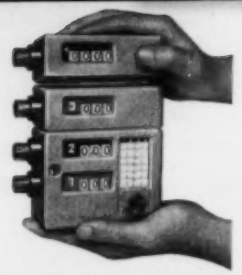
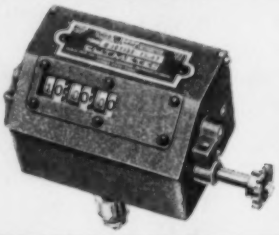


2-3-4 Pick, Hank, Yardage & Knitting Machine Counters:

These convertible counters record production separately for each of 2, 3 or 4 shifts, providing a basis for wage payment. Basic 2-shift counter can have 3rd and 4th shift counting units added right in the factory, on the machine, as needed.



Loom Cut Meters

AND PREDETERMINING COUNTERS:

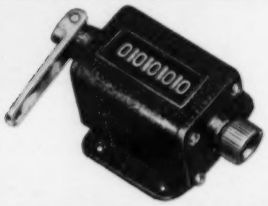
Cut Meters are predetermining counters for looms, for controlling lengths of cloth woven, without cut marks . . . and without over-runs and shortages. Also available are High Speed Predetermining Counters, both geared and ratchet types, to count any preset number of turns, strokes, pieces, lengths, etc.

Double-Wheel Measuring Counters:

Worm-driven Reset Counter at left registers linear units as friction wheels pass over the material. Medium speed range. Widely used in inspection.

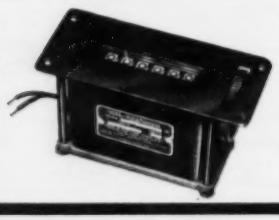
High Speed Reset Double Wheel Counter runs at speeds up to 6,000 rpm or 8,000 cpm.

Resets to zero with finger-flick.



Small Reset Counters:

Used on a wide variety of textile machines. Revolution or ratchet types, for speeds up to 1,000 counts per minute.



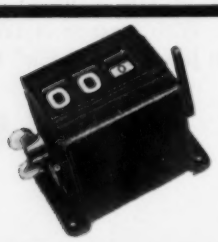
Reset Magnetic Counters:

Base mounted or panel mounted. Ruggedly built for speeds up to 1,000 counts per minute. Knob or lock-key reset.

Widely used for remote indication.

Vary-Tally:

This modern hand-operated counter, made only by Veeder-Root, is arranged compactly on stands in tiers. Can be supplied in any of 67 combinations up to 6 tiers high and 12 units wide. Entire row of counters is reset to zero with a turn of one knob.



Hosiery Dozens Counter:

Used in inspection, doffing or on knitting machines. Small figures show single-stocking count. Large figures indicate dozens of pairs up to 100. Hand, foot, or machine actuated.

Argonne Worsted Co., Woonsocket, R. I., is closing its combing division. It will continue to spin yarn.

B. I. Cotton Mills, Greensboro, N. C., is adding 50,000 sq. ft. to its warehouse.

Bangor Mills, Pen Argyl, Pa., has completed a $1-million expansion program that included the installation of 100 warp-knitting machines.

Bernard Mills, Inc., Methuen, Mass., has leased 30,000 sq. ft. of space in the Lane Building in Methuen and will concentrate its weaving operations there. The expansion will call for about a 10% increase in the work force.

Blanche Cotton Mills, Augusta, Ga., has been damaged by fire at an estimated cost of $25,000.

Burlington Industries, Inc., Greensboro, N. C., has bought Charm Tred Mills, Chicago, Ill. Charm Tred will operate as a division of Burlington Industries with no change in management or operating personnel. The company has also bought Cheraw Weaving Mill, Cheraw, S. C. Cheraw will also operate as an independent division.

Cone Mills Corp., Greensboro, N. C., has started construction of a new warehouse in Greenville, S. C.

Grenada Industries, Inc., Grenada, Miss., has started a $400,000 expansion for a nylon-hosiery operation. The program includes an addition of 15,000 sq. ft. and an increase of 150 to its staff.

P. H. Hanes Knitting Co., Winston-Salem, N. C., has announced plans for a new $1-million manufacturing plant in Galax, Va. The plant will consolidate operations at three locations now being used by the company in the vicinity. Construction will start this fall. The plant will have about 150,000 sq. ft. of space, all on one floor.

Hanes Dye & Finishing Co., Winston-Salem, N. C., has started an expansion program at an estimated cost of $400,000. Two separate additions to the plant on Northwest Boulevard will be made. About 55,000 sq. ft. of floor space will be added.

Samuel Hird & Sons, Garfield, N. J., has announced that it has contracted to buy the land and buildings of Frank Ix & Sons, Virginia Corp., Cornelius, N. C. The plant will be used to expand and supplement portions of the operations now located in Clifton and Garfield, N. J., principally spinning and weaving. Installation of new machinery and equipment and employment of personnel will begin following transfer of title.

Jean Hosiery Mill, Inc., Villa Rica, Ga., is a newly incorporated company.

Johnson & Johnson, New Brunswick, N. J., is moving its cotton- and gauze-manufacturing operations in New Brunswick to Chicago, Ill., about Oct. 1.

J. P. King Mfg. Co., Atlanta, Ga., is planning to build a finishing plant in McCormick County, S. C.

Kingston Mills, Inc., Cartersville, Ga., has started building a carpet mill in White, Ga. The 80,000-sq.-ft. plant will be built of concrete and steel and will house all carpet-manufacturing operations from spinning through finishing.

Klopman Mills, Inc., has started an expansion program at its Steele plant in Cordova, N. C. The building will be modernized, and facilities for air conditioning will be installed.

Magnet Mills, Inc., Clinton, Tenn., will build a 7,500-sq.-ft. addition to its hosiery-finishing plant. The addition will be used for shipping and storage.

James Lees & Sons Co., Fontana Mills Div., Robbinsville, N. C., is the new name of Fontana Mills, Inc.

M. Lowenstein & Sons, Inc., New York, N. Y., has bought controlling interest in Chiquola Mill, Inc., Honea Path, S. C.

Kayser-Roth Hosiery Co., Inc., Maiden, N. C., has completed a 2,400-sq.-ft. addition and has installed additional equipment. The Maiden plant is sewing leotards finished in the Duke Div. in Hickory.

Madison Throwing Co., Madison, N. C., is expanding its present floor space by about 15,000 sq. ft.

New Bedford Cordage Co., New Bedford, Mass., has sold 10 interconnected buildings to two New Bedford groups.

Norwich Mills, Inc., Norwich, N. Y., is adding a 10,000-sq.-ft. addition to its plant in Clayton, N. C.

Parapalm Finishing Corp., Fair Lawn, N. J., is a newly formed corporation. It is operating in the former Palmer Dyeing Corp.'s plant.

Pickwick Knitting Mills, Brooklyn, N. Y., is adding 20,000 sq. ft. of floor space to be used for the installation of additional knitting machines.

Sackner Products, Inc., Grand Rapids, Mich., has acquired Fox Edge Co., Inc., Lowell, Mass., and Continental Cordage Co., Jersey City, N. J.

Sale Knitting Co., Martinsville, N. C., has bought an unoccupied textile plant and industrial property at Somerset, N. C. At present the space will be used for storage.

Seneca Knitting Mills, Seneca Falls, N. Y., has started carding and spinning operations at its new $2-million plant.

Summers Hosiery Mills, Salisbury, N. C., is undertaking the first step of a five-year expansion program. A 1,500-sq.-ft. addition is being built.

J. P. Stevens & Co., Inc., Greenville, S. C., has taken over active management of Borden Mills, Inc., Kingsport, Tenn.

CALENDAR

September

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Sept. 9

Carded Yarn Association, annual convention, The Cloister, Sea Island, Ga., Sept. 10 & 11

Fiber Society, Inc., fall meeting, Princeton, N. J., Sept. 11 & 12

AATCC, Southeastern Section, Ida Cason Callaway Gardens, Pine Mountain, Ga., Sept. 12

3rd International Textile Exposition, Milan, Italy, Sept. 12 to 21

Combed Yarn Spinners Association, annual convention, The Cloister, Sea Island, Ga., Sept. 17 & 18

AATCC, South-Central Section, Hotel Patten, Chattanooga, Tenn., Sept. 19

Third Annual Industrial Nuclear Technology Conference, Morrison Hotel, Chicago, Ill., Sept. 22 to 24

Northern Textile Association, annual meeting, Wentworth-By-The-Sea, Portsmouth, N. H., Sept. 23 & 24

AATCC, Western New England Section, Blake's Restaurant, Springfield, Mass., Sept. 25

AATCC, Niagara Frontier Section, Niagara Falls, Ont., Sept. 25

AATCC, Piedmont Section, Barringer Hotel, Charlotte, N. C., Sept. 25 & 26

American Gas Association, Textile Processing Symposium, Sedgefield Inn, Greensboro, N. C., Sept. 28 & 29

October

Textile Quality Control Association, fall meeting, Grove Park Inn, Asheville, N. C., Oct. 1 & 2

Textile Operating Executives of Georgia, fall meeting (slashing and weaving), Hightower Textile Building, Georgia Institute of Technology, Atlanta, Ga., Oct. 3

Chemical-Finishing Conference, sponsored by the National Cotton Council, Mayflower Hotel, Washington, D. C., Oct. 7

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Oct. 14

N. C. Textile Manufacturers Association, annual convention, Carolina Hotel, Pinehurst, N. C., Oct. 8 & 9

Southern Textile Methods & Standards Association, fall meeting, Clemson House, Clemson, S. C., Oct. 8 & 9

AATCC, annual convention, Sheraton-Park and Shoreham Hotels, Washington, D. C., Oct. 8 to 10

Alabama Textile Operating Executives, fall general meeting on carding and spinning problems, Langdon Hall, Auburn, Ala., Oct. 10

Textile Education Foundation, Inc., annual meeting, A. French Textile School, Georgia Institute of Technology, Atlanta, Ga., Oct. 17

47th Annual National Safety Congress & Exposition, sessions on industrial safety scheduled for the Conrad Hilton, Congress, Sheraton, Morrison, and La Salle Hotels, Chicago, Ill., Oct. 19 to 23

ASME-ASLE Lubrication Conference, Sheraton-McAlpin Hotel, New York, N. Y., Oct. 20 to 22

Institute of Textile Technology, Technical Advisory Committee and Board of Trustees, fall meeting, Charlottesville, Va., Oct. 27 & 28

November

Narrow Fabrics Institute, annual meeting, Hotel Biltmore, New York, N. Y., Nov. 9 & 10

December

AATCC, Northern New England Section, joint symposium with ASME Textile Engineering Div., Smith House, Cambridge, Mass., Dec. 4

1960

April

American Cotton Manufacturers Institute, annual meeting, Americana Hotel, Bar Harbor, Fla., April 6 to 9

May

American Textile Machinery Exhibition, Atlantic City, N. J., May 23 to 27

11th Annual Cotton Research Clinic, Grove Park Inn, Asheville, N. C., May 31 to June 2

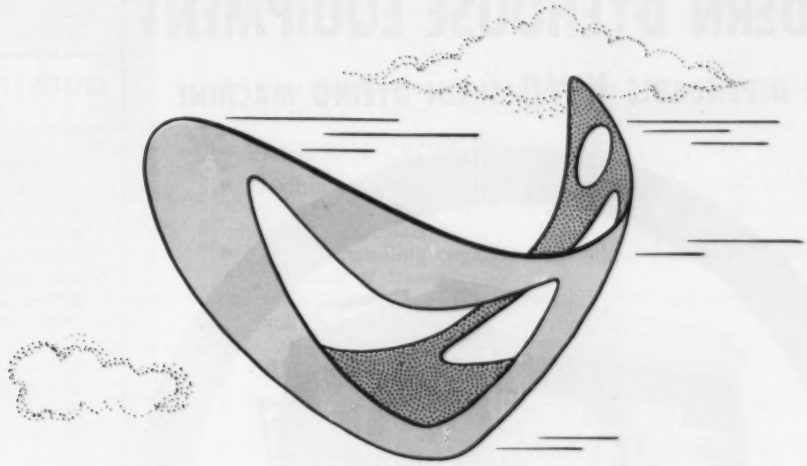
June

Southern Textile Association, annual convention, Grove Park Inn, Asheville, N. C., June 23 to 25

October

21st Southern Textile Exposition, Textile Hall, Greenville, S. C., Oct. 3 to 7

AATCC, national convention, Sheraton Hotel, Philadelphia, Pa., Oct. 6 to 8



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Now there's a new dimension back of Butterworth Machines for the wet end of textile finishing. It's the service of experienced sales-engineering organizations calling regularly on your mill.

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FOR QUALITY DYEING
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QUESTIONS & ANSWERS

Do you need help on a technical problem? TEXTILE WORLD is at your service in helping solve problems in yarn manufacturing, weaving, knitting, dyeing, finishing, and other textile operations. A large staff of mill men, consultants, and other experts are available for authoritative answers. Send your problem to the Editor, Questions and Answers, TEXTILE WORLD, 201 E. Coffee St., Greenville, S. C.

Water-to-Oil Ratio Is Important in Wool Blending

Technical Editor:

We are running medium wool and shoddy blends and having processing troubles caused by incorrectly proportioned water-and-oil emulsions. Our blends are:

1. 75% medium wool and 25% worsted picked shoddy
2. 60% Texas wool and 40% worsted noils
3. 50% coarse 40s wool, 35% worsted picked shoddy, and 15% garnetted nylon.

What is the best water-to-oil emulsion ratio to use on the blends? (1454)

For Blend 1, use a 4-to-1 ratio of water to oil and apply about 16% emulsion on the weight of the stock. Use the same emulsion and weight of application for Blend 2.

For Blend 3, use 12% emulsion mixed in a 6-to-1 water-to-oil ratio since the nylon does not take the oil. Two or three pickings may be necessary for best results.

Checklist Is Useful In Overhauling Cards

Technical Editor:

We are planning to overhaul about 100 cotton cards with our own personnel and want to do the job in the most efficient manner possible. Have you any suggestions? (1452)

Here's a checklist for overhauling cards that has been used successfully by a large cotton mill. You may want to vary the order of some of these operations to suit local conditions, but if you cover each point listed here your cards should soon be in good condition.

1. Clothe cylinder and doffer if needed.

Spartan Mills leads with NEWEST in Frame Cleaning

To keep more frames cleaner than ever before, Spartan Mills is first with the newest combination for cleaning:

1. **BAHNSON CROSS-JET CLEANER**
   - Flexible trunks for each side of frame clean creel, drafting system, and frame. Multiple air nozzles in trunks provide total frame cleaning.
   - High air handling capacity with adjustable air volume for each area of frame.
   - Oscillating air outlets provide 180° overhead cleaning, plus track and conductor bar cleaning.
2. **BAHNSON VERT-I-RAIL TRACK**
   - First modern creel-mounted, single rail I-beam track offered for frame cleaners.
   - Wider surface for wheel contact results in minimum track wear, maximum track life.
   - Shielded conductors are open at top and bottom for easier air cleaning and maintenance.

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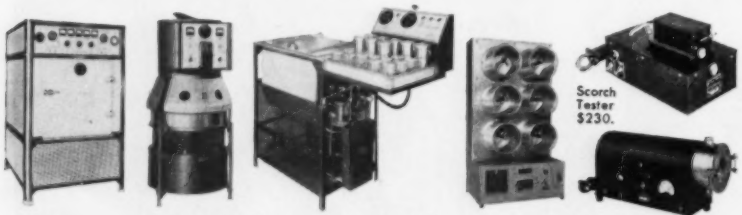
The introduction of so many synthetic fibers since World War II, while revolutionizing the textile industry, has presented problems concerning the color fastness, weathering properties, detergent reaction, and washing and wearing of these new fibers.

Controlled, accelerated and exactly duplicated tests with ATLAS-OMETERS will give you the answers—accurately and quickly—to new fiber vagaries. You will find that *one* ATLAS test is worth a *thousand* guesses.

Write for bulletins on ATLAS-OMETERS



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2. Surface grind if needed.
3. Align and level.
4. Clean or replace and reset screens.
5. Check cylinder, doffer, and lickerin bearings; replace bad ones.
6. Install reworked flexible bends.
7. Install new flats and chains and replace worn sprocket shafts.
8. Clean all brushes and rebristle them if necessary.
9. Straighten back and front plates and polish out rough places.
10. Overhaul coiler head and replace worn parts and gears.
11. Check coiler and calender trumpets.
12. Install reworked feed rolls.
13. Replace bad lickerins.
14. Replace bad cylinder and doffer shafts.
15. Clean card thoroughly and reset all setting points.
16. Lubricate card thoroughly from end to end.

Yarn Causes Crow Feet In Knitted Fabrics

Technical Editor:

We are spinners of worsted yarn and blends on the French system and are having a problem supplying one of our customers with 2/29s yarn in 66s quality shrink-treated wool.

The evenness is satisfactory; but when the yarn is knitted, dyed, and finished, the fabric wrinkles and appears to have what we call crow feet. The defects are more prominent at the waist band, cuffs, and shoulders.

Twist used is 11 tpi. Z for singles and 6 tpi. S for ply yarn. (1464)

There should be no difference in defects between the waist band and cuffs of a pullover or cardigan sweater so far as texture and structure are concerned.

The first thing to do is to determine whether the fault lies in the yarn or in the settings at the knitting machine. One way to check is to run some of the yarn along with regular yarn and see what kind of imperfections show up.

If there are no imperfections in the fabric made from the regular yarn, the trouble must be in the shrink-treated yarn. In this case, about all you can do is check each process for variation and other factors that might cause trouble.

If the trouble seems to be at knitting, it may be that too much yarn is being drawn as the stitches are formed. Or maybe the knitter is pulling the stitch because the yarn has been shrink-treated.

Here's real money-value in a liquid detergent!

Nacconol® SL

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You get a double bonus when you specify this efficient anionic.

First, NACCONOL SL gives you more cleaning power per dollar on an active ingredient basis than most dry products.

Second, waste is minimized and processing time reduced. NACCONOL SL is clean and easy to handle. The pale yellow liquid is clear and free-flowing even below 32°F. No dissolving is needed . . . you simply add tap water for the required concentration.

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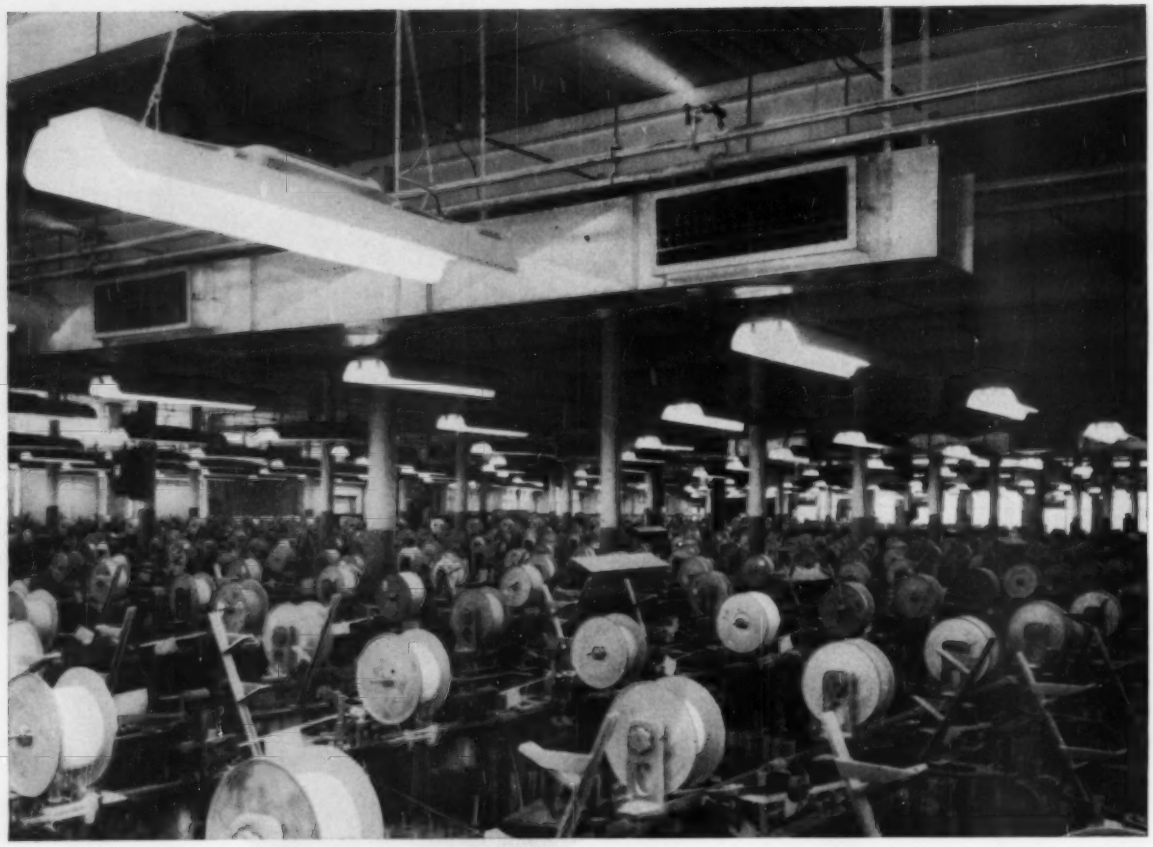


Providence Braid Company, Providence, R. I. showing ductwork, air outlets and atomizers.

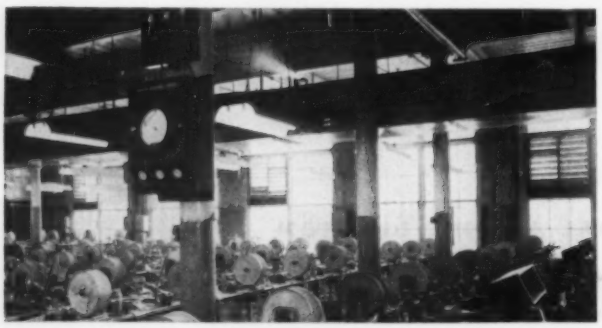
Is your humidifying system providing maximum cooling?

At Providence Braid Company an Amco Unit Dry-Duct system operates to control humidity precisely and, at the same time, to provide maximum cooling commensurate with the required evaporation.

As moisture from atomizers in a humidifying system evaporates, heat is absorbed and the air temperature is lowered. This cooling can be increased substantially by a positive ventilating system (such as an Amco Unit Dry-Duct system) which introduces fresh air uniformly throughout the mill room, thereby deliberately increasing the demand for evaporation in order to lower the temperature and maintain the selected humidity.

A unit dry-duct system consists of one or more air handling units, air ducts, room atomizers and pressure type window vents. When cooling is not required, recirculated air (instead of fresh air) is drawn into the unit, filtered and heated when necessary, then distributed through the ducts back into the room.

Amco's Unit Dry-Duct system is only one of several types of textile mill air conditioning systems which Amco engineers, manufactures and installs. For expert help, based on more than 70 years' experience, next time call on Amco.



◀ In same mill room, humidity control in foreground — window exhaust vents in background.

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AIR CONDITIONING EQUIPMENT

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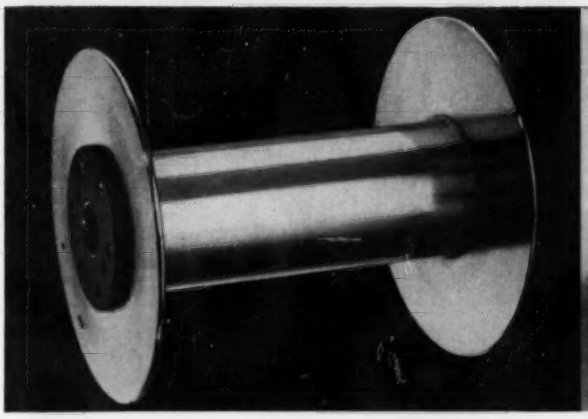
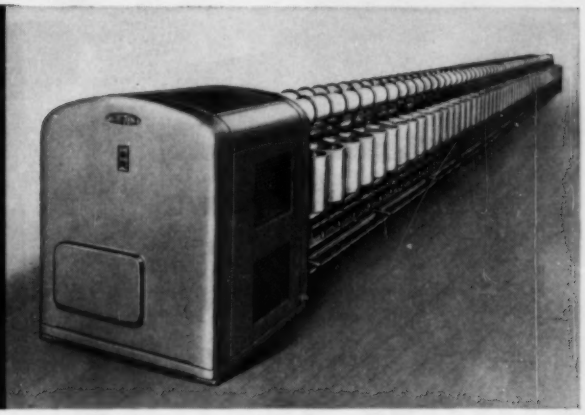
BOOST PRODUCTION 50% WITH ALUMINUM SPOOLS...

increase twister capacity too!





Some 3500 aluminum spools are now saving money for one rug manufacturer on equipment such as this Whitin Cable-King Uptwister, manufactured by the Whitin Machine Works, Whitinsville, Mass. In addition, the aluminum spools were 25% less costly than the previously used spool material.

Mills find multiple benefits by using lightweight pressure-resistant aluminum spools in Whitin's ring and uptwisters

FASTER SPEEDS: Helps attain increase in operational speeds of up to 50%.

LARGER PACKAGES: Improved technology implemented with aluminum spools makes it possible to produce packages up to 10 lbs. of yarn. This permits production of cones of equal size of plied yarn without a plied splice.

GREATER ECONOMIES: Larger packages reduce splices by 66%, thereby stepping up efficiency of subsequent processes including tufting and weaving.

A typical application of aluminum spools is the special Whitin *Spoolmatic* Winders and *Cable-King* Uptwisters which have increased carpet yarn production by up to 50%. This equipment now brings to makers of twisted yarn everywhere all the benefits of this new multiple ply process formerly enjoyed only by tire yarn producers.

The lightweight spool itself is true, sturdy and pressure resistant. It was developed by Engineered Plastics, Gibsonville, N. C.—through the close cooperation of Kaiser Aluminum. It's another outstanding example of the production advantages and economies which more and more textile companies are realizing with aluminum.

To find out how aluminum's unique combination of advantages can best serve *you*, mail the coupon today.

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Safeguards Against Motor Burnouts...

by Specifying and Using 3-Phase Motors with Built-in KLIXON PROTECTORS on UNIFIL Loom Winders

The Unifil Loom Winder, introduced by Universal Winding Company after years of research and development work, is meeting unprecedented reception as a new concept of filling yarn preparation for the textile industry.

This new machine has, since its inception, featured a KLIXON-protected 3-phase motor.

Universal Winding, like many other manufacturers, has found that motors with built-in KLIXON Protectors:

- Eliminate motor burnouts
- Increase motor output under adverse operating conditions
- Simplify motor controls
- Reduce motor installation costs, repairs and replacements
- Save on production down time

Because KLIXON 3-phase Protectors are responsive to both current and temperature, motors will not burn out from overheating . . . but instead they handle any load condition under any surrounding temperature condition.

KLIXON Protectors safeguard motors against the following conditions:

Prolonged overloads, unbalanced voltage, stalling, failure to start, increase in ambient temperatures, lack of ventilation, plugging or reversing duty, single-phasing.

KLIXON Motor Protectors are available for 3-phase motors ranging in size from fractionals up through 7½ h.p.

Get full details from your motor salesman, or write for your copy of Bulletin PR-1243. Then specify motors with KLIXON Inherent Overheat Protectors. The savings you receive more than offset the slight additional cost.

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Each frame stick is a lamination of strips of carefully selected high quality wood permanently bonded together for greatest strength.

Here are a few of the many advantages:

1. **Greatest stability with less distortion during its entire long life;**
2. **Elimination of excessive wear on heddles or adjacent frames because there is no warping;**
3. **Greater holding power for hardware;**
4. **Practically no splintering due to careful selection of wood used for edges;**
5. **Elimination of weak spots by careful selection and blending of wood used in lamination.**

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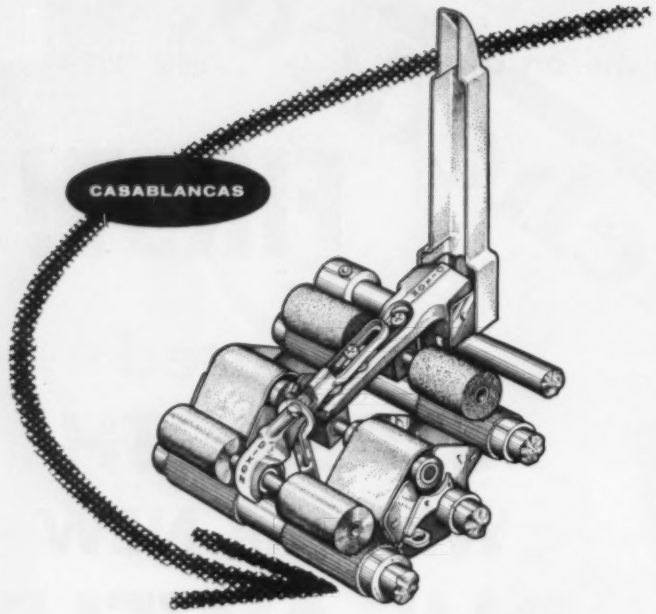

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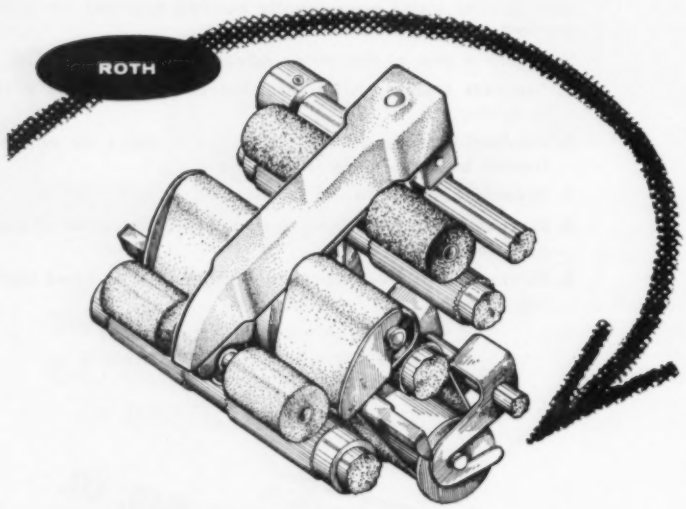
ENGINEERED CHANGEOVER PLANS

for Both Spinning Systems



Dixon's multi-step changeovers for *both* Casablancas and Roth spinning systems are the product of over eighty years of specialized service to the textile industry. More than 2,000,000 spindles in leading mills* throughout the country attest to the dependability and high performance of Dixon-designed equipment.

If your spinning is outdated, a Dixon Engineered Changeover Plan is the most economical way to regain your competitive position in the industry. Dixon's broad product line and intimate knowledge of spinning technology make it possible for our engineers to recommend the system which will provide fastest pay-back in your mill . . . in terms of reduced cleaning, elimination of lubrication, fewer ends down, longer drafts, and better yarn uniformity. Furthermore, each Dixon Engineered Changeover Plan — whether Roth or Casablancas — can be installed in one or multiple low-cost steps. Mill profits improve RIGHT FROM THE FIRST STEP! When complete, the Dixon Plan provides the latest word in spinning efficiency:

- Middle and back rolls run on RULON® . . . the oil-free bearing that never is lubricated . . . outwears nylon 12 times.
- The Dixon patented self-aligning front roll rides on a hardened and ground, pre-lubed, sealed, precision ball bearing which is guaranteed for years and years and never requires lubrication.
- All parts are maintenance free. Pay-back on your investment is a matter of months.
- Productivity and quality improve. Yarn is cleaner . . . seconds decrease.

Want proof of performance? Ask our customers . . . also send for actual cost analysis of typical Dixon Changeover Plan which paid for itself in twenty-five months and is now saving $1.50 per spindle per year.

Dixon Corporation, Bristol, Rhode Island.
Southern Sales: Dunson & New, Inc., Box 9202 Greensboro, N. C.; Box 321 Greenville, S. C.; Box 445 West Point, Ga.

*To mention a few.

Mill	Spindles	System
Clifton Mfg. Co.	71,918	Double Apron Roth & Casablancas
Monroe Cotton Mills	18,756	Double Apron Casablancas
Columbus Mfg. Co.	17,000	Double Apron Roth
Crown Cotton Mills	15,232	Double Apron Roth & Casablancas
Deering Milliken	121,500	Double Apron Roth

Dixon

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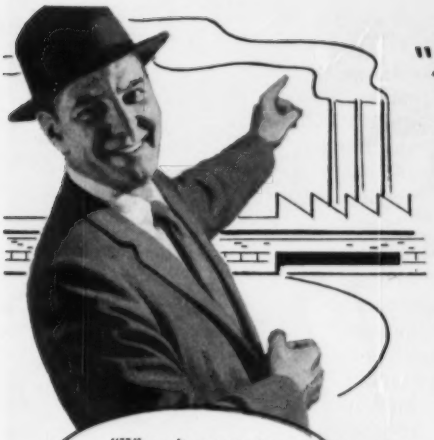

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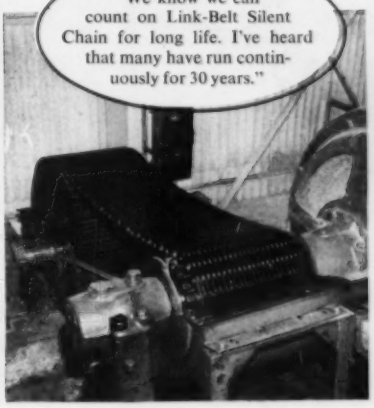

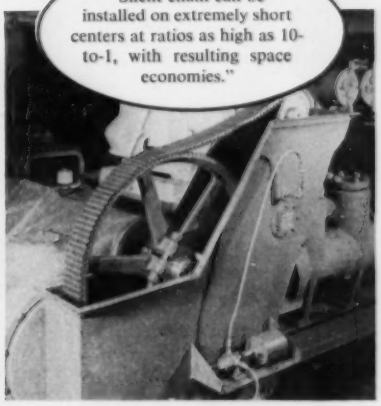

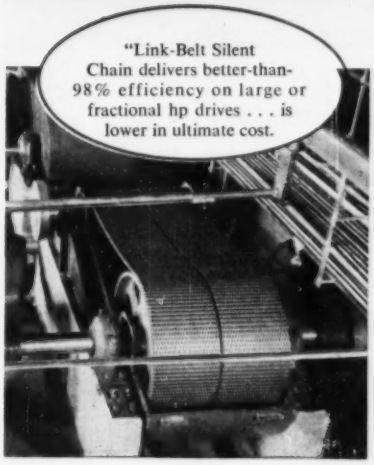

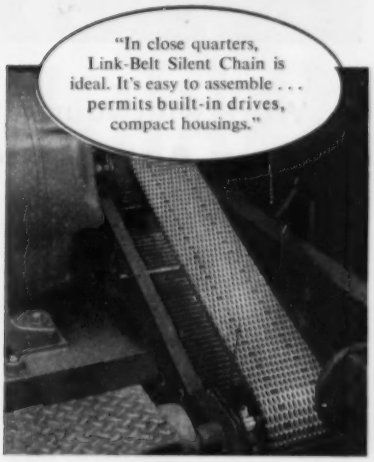

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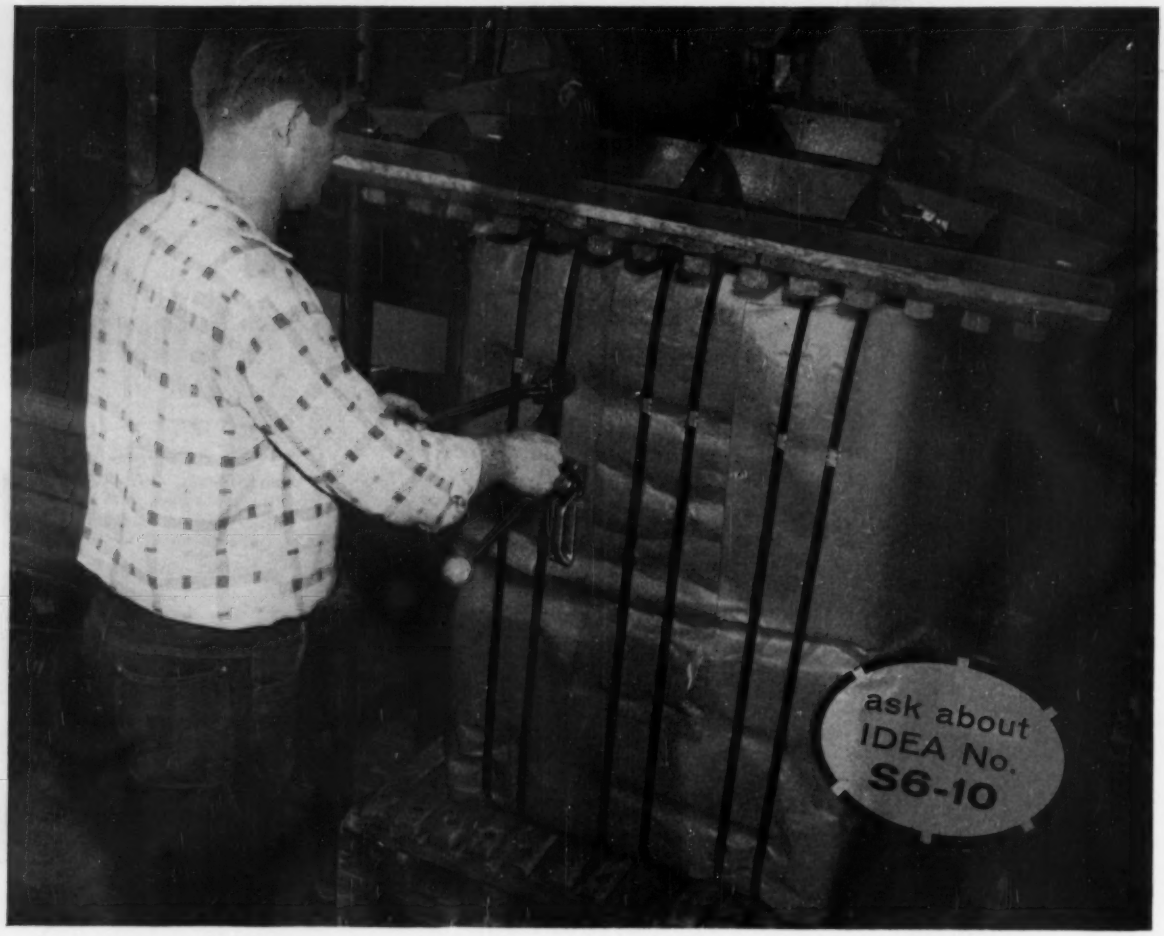


Work with your AIM*. . . Belle-Vue Mills Div., does . . .

New Acme Steel Strapping Tool speeds baling

Acme Idea Man E. S. Lumpkin aids the Belle-Vue plant and many other companies with materials handling problems.

BELLE-VUE MILLS DIV., WELLMAN OPERATING CORP., HILLSBORO, N. C., with the help of their Acme Idea Man, sought a way to make baling their fabrics faster and easier. (Idea No. S6-10)

The new B-5 Stretcher proved a good answer. The bales are still processed in the same way—enclosed with asphalt impregnated paper, loosely encircled with steel strapping, and then compressed. But then the B-5 takes over, and makes the tensioning operation much easier and noticeably faster. Using this method, one man produces about 40 bales a day—all strong and secure.

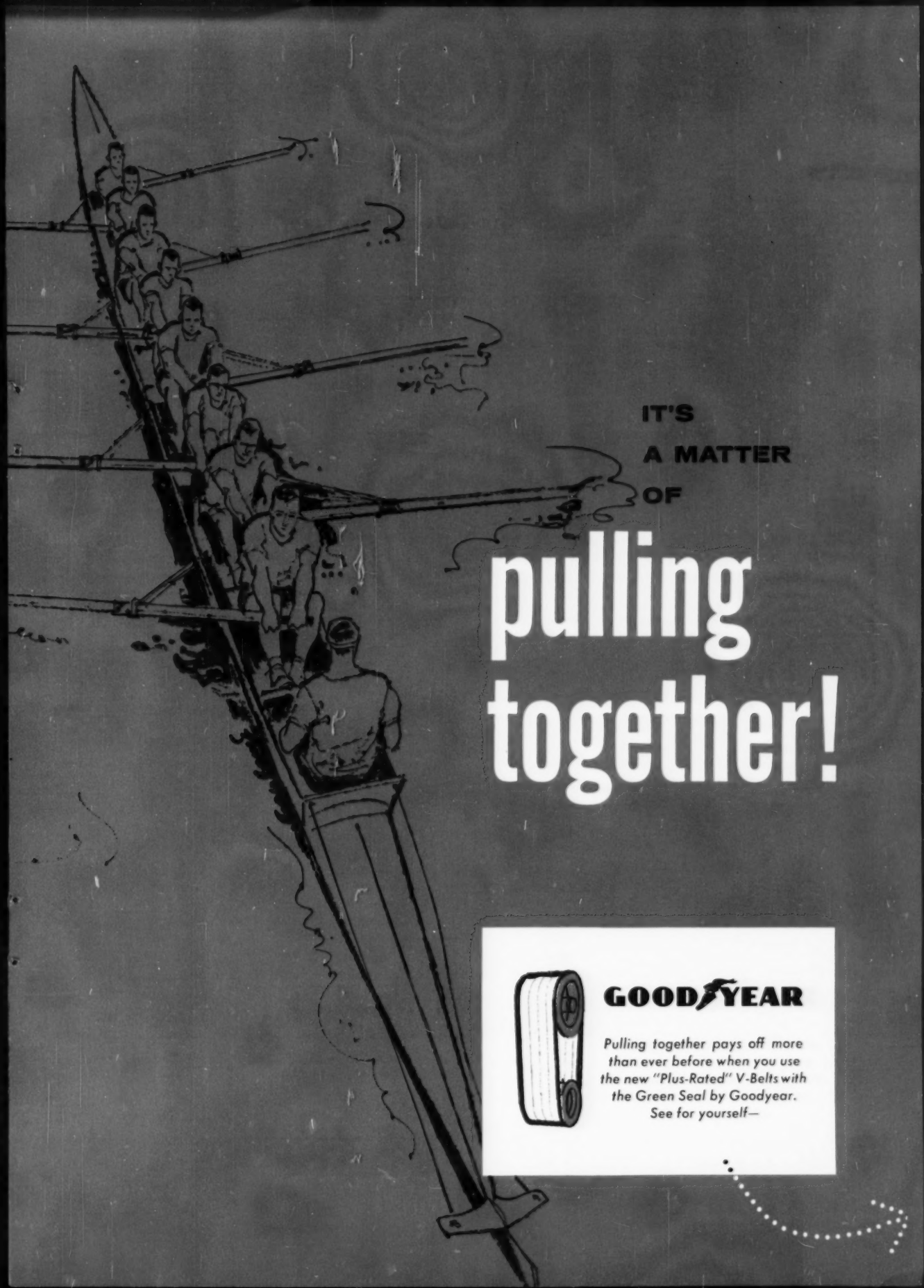
Workers like the new B-5 Stretcher, too. This light, strong tensioning tool can be used in most any application and works equally well in any operating position.

***Work with your Acme Idea Man.** He is aware of the latest time and money-saving solutions to materials handling problems. Call or write Dept. TAS-99, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Limited, 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

 CIRCLE 30 ON READER SERVICE CARD

CIRCLE 31 ON READER SERVICE CARD→


IT'S
A MATTER
OF
pulling
together!
GOODYEAR
Pulling together pays off more than ever before when you use the new "Plus-Rated" V-Belts with the Green Seal by Goodyear. See for yourself—

Year after year—at plant after

Goodyear V-Belts with

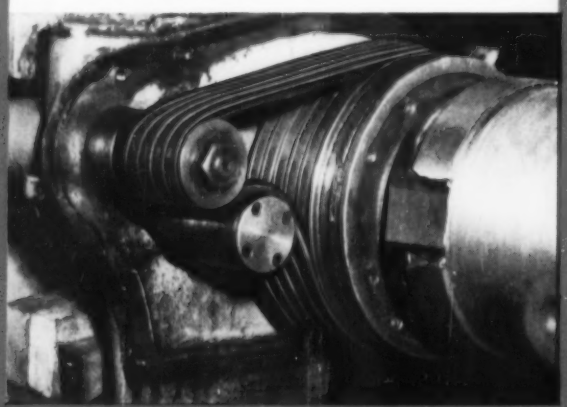
the toughest jobs—at the lowest cost

—IN AN ILLINOIS GARAGE EQUIPMENT PLANT

Operation: Finishing surfaces of cylinders used on automobile lifts

Drive: Oily main drive of heavy-duty cylindrical grinder

Service: Set of 5 matched oil-resistant V-Belts with the Green Seal pulled together to give user 6 times the service of previous belts

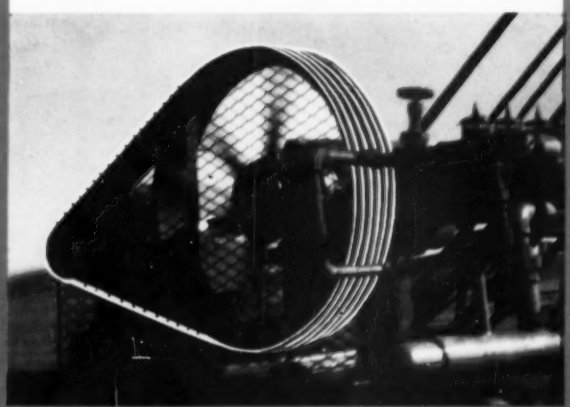


—ON TEXAS WATERFLOODING PUMPS

Operation: Pressure-pumping salt water into "tired" oil wells to reactivate them

Drive: 15 h.p. pump drive that feeds salt water into wells under 600-900 psi pressure

Service: Five-belt set of V-Belts with the Green Seal pulled together, eliminating slippage problem caused by previous belts and averaging 2 years' service where others had failed in 6 months



—and now they're "Plus-Rated" for greater

plant–on drive after drive–

the Green Seal handle

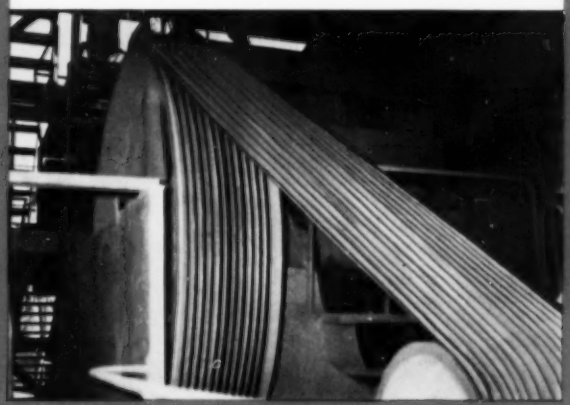
–over the longest trouble-free life–

–AT AN OREGON LUMBER MILL

Operation: Debarking giant logs
Drive: 25 h.p. 900-1800 r.p.m., 2-speed main drive on barker
Service: Matched V-Belts with the Green Seal–five to the set–pulled together and outlasted previous belts 14 to 1–eliminating down time–saving $40 a month to boot

–ON A PENNSYLVANIA ROCK CRUSHER

Operation: Crushing dolomitic limestone
Drive: Main drive on bulldog-type rock crusher
Service: Set of 14 matched V-Belts with Green Seal construction pulled together to crush 600,000 tons of limestone a year for 14 straight years–was still going strong at last report



horsepower-transmission per dollar!

HERE'S THE STORY .....

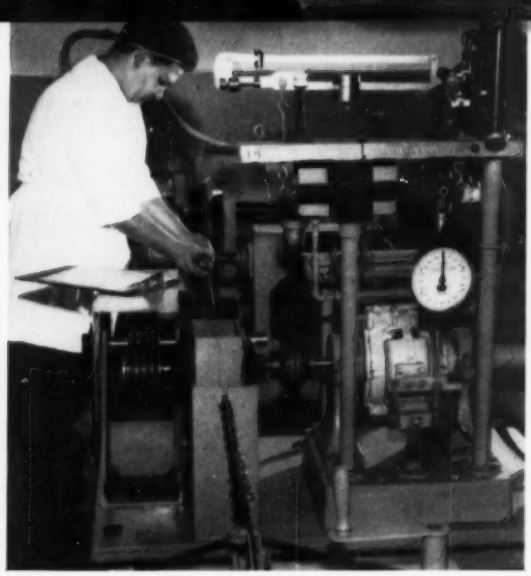
New

"Plus-Rated" V-Belts

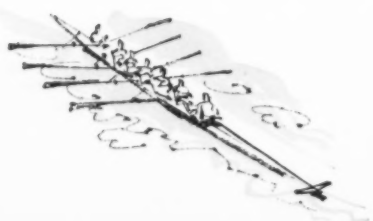
with the

Green + Seal

give you all these "pluses"



- Bonus horsepower ratings at no extra cost
- Maximum horsepower hours per dollar of any belt you can buy
- Matched V-Belt sets that *stay* matched in storage—on the drive
- Unequaled stretch-resistance – thanks to high-modulus construction with load-carriers of airplane-type steel cable or 3-T cord
- Smooth-running uninterrupted performance with specially compounded non-dusting rubber covers that never stick in the grooves
- Maximum resistance to shock-loads—guaranteed by breaking-point tests that exceed the strain of severest service



—Add up all these plus features and you'll see why the new "Plus-Rated" V-Belts with the Green Seal are your best belt buy for longer-than-ever, more-trouble-free service at lower-than-ever cost. For details, contact your Goodyear Distributor—or clip, fill in, and mail the coupon below.

Green Seal—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

"PLUS-RATED" V-BELTS WITH THE GREEN SEAL BY

GOODYEAR

THE GREATEST NAME IN RUBBER

S-51165-K

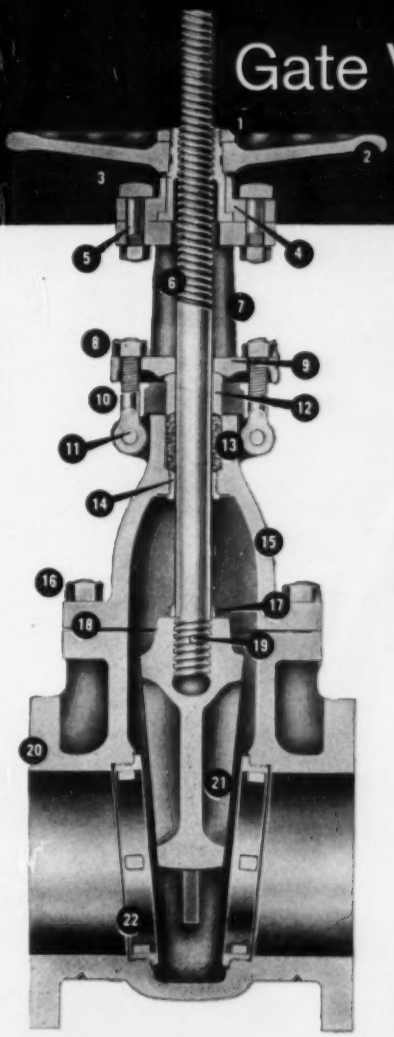
THE GOODYEAR TIRE & RUBBER COMPANY, Industrial Products Division, Dept. 794, Akron 16, Ohio
Please send me more information on the great new "PLUS-RATED" V-Belts with the Green Seal.

Name .....

Company .....

Street Address ..... City ..... Zone ..... State .....

You extend valve life in Corrosive and Erosive services TWO WAYS when you Specify for Gate Valves, too



No. 1 ... when you specify "Jenkins" you get not merely "Ni-Resist" metal but you get Type 2 Ni-Resist Cast Iron! That affords extra resistance to acids, salt and alkaline solutions, sea water, brine and other corrosive and erosive fluids, vapors or gases. It is copper-free and will not contaminate or discolor the materials controlled.

Type 316 Stainless Steel is used for the wedge, spindle and other trimmings to give you a combination of metals which have remarkable ability to withstand destructive service.

No. 2 ... you get all the excellence which the Jenkins Diamond trademark has represented for nearly a century. The superior design and construction are visible here. Equally important superiorities which show up only in the records of long service and low maintenance are the close grain and high density of Jenkins castings ... the precision of Jenkins machining ... the rigid inspection and testing which every Diamond-marked valve undergoes.

It costs no more to buy Ni-Resist Gates made by Jenkins. And, it may cost much less to USE them. Write us, or ask your Jenkins Distributor for information folder No. 205.

1 Bronze yoke bushing nut
2 Handy grip iron wheel
3 Bronze yoke bushing
4 Iron yoke cap with zerk fitting for lubricating bushing
5 Steel yoke cap bolts and nuts
6 TYPE 316 STAINLESS STEEL spindle
7 NI-RESIST CAST IRON, TYPE 2, yoke
8 Bronze eye bolt nuts
9 Malleable iron gland flange
10 Steel gland eye bolts
11 Steel gland lug bolts and nuts
12 TYPE 316 STAINLESS STEEL gland
13 Teflon impregnated asbestos packing
14 TYPE 316 STAINLESS STEEL bonnet bushing
15 NI-RESIST CAST IRON, TYPE 2, bonnet
16 Steel bonnet bolts and nuts
17 TYPE 316 STAINLESS STEEL spindle ring
18 Asbestos gasket
19 TYPE 316 STAINLESS STEEL wedge pin
20 NI-RESIST CAST IRON, TYPE 2, through-port body
21 TYPE 316 STAINLESS STEEL solid I-beam wedge
22 TYPE 316 STAINLESS STEEL seat rings

JENKINS VALVES

LOOK FOR THE JENKINS DIAMOND

JENKINS SINCE 1864 Jenkins Bros

Sold Through Leading Distributors Everywhere

JENKINS BROS., 100 Park Avenue, New York 17, N. Y.

Send folder No. 205 describing Ni-Resist Gate Valves

Name & Title .....

Company .....

Address .....

J. A. Pitts, Assistant Overseer of Spinning at Chiquola Manufacturing Company, Honea Path, S. C., checks yarn quality with Armstrong representative, Taylor Weaver.

Your Armstrong man can help you get top production from your spinning frames

For top production, in quality and quantity, your spinning frames need cots that are specially suited to the frame and fiber. And your Armstrong man can help you select the right cot for your work from the wide variety of Armstrong Accotex materials.

The experience and specialized training of your Armstrong man are backed by close, regular contact with machinery manufacturers. It's a combination that should — and does — provide the answer to almost any question involving roll covers.

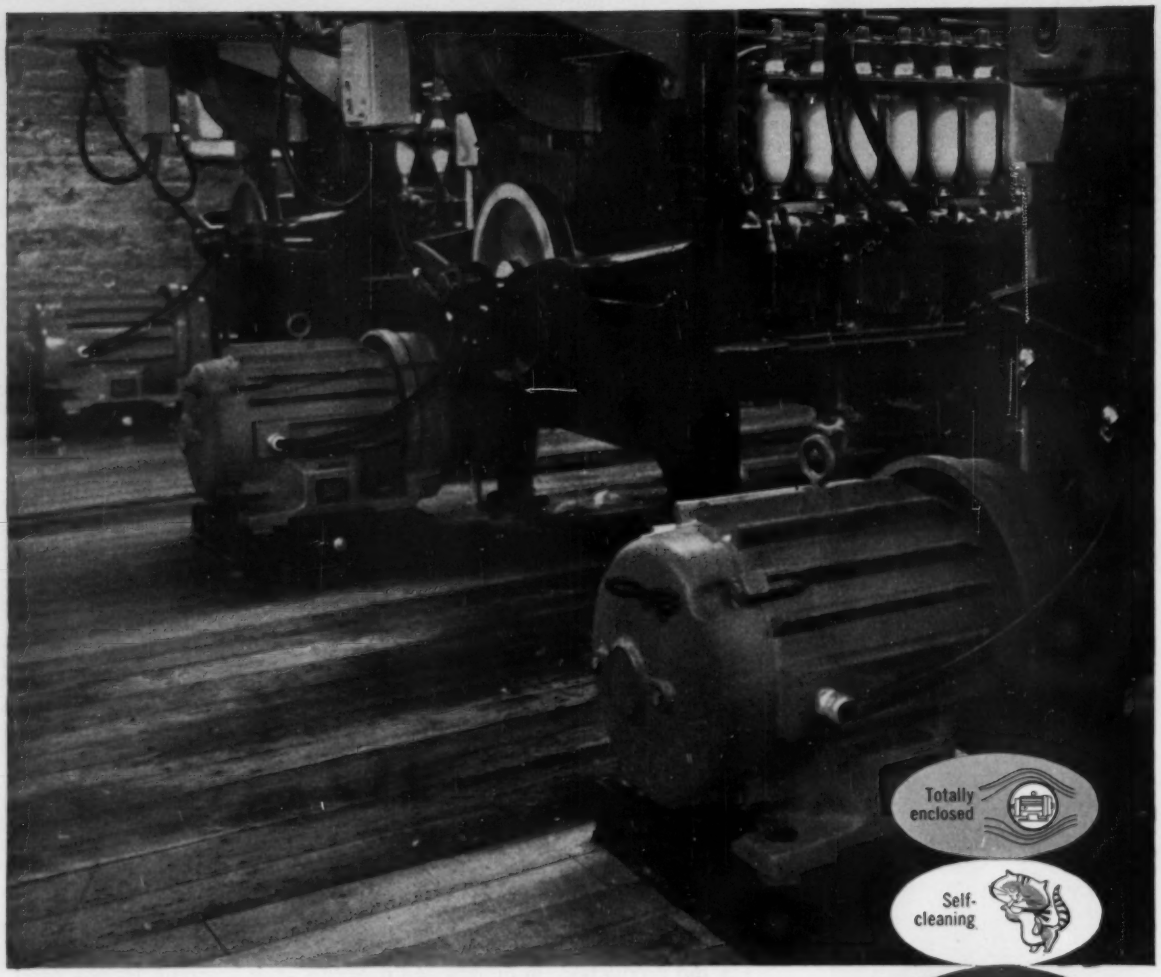
The Accotex line includes materials engineered to solve many specific problems. Accotex anti-static cots were developed to alleviate the problem of lapping caused by high static. Accotex NC-762 has a special "constant friction" surface designed to help eliminate eyebrows on frames with flat clearers. In some cases, a softer cot material will increase break strength and decrease yarn irregularities. There are several softer Accotex compounds designed to fill this need.

Whatever your frame, fiber, or particular spinning problem, there's an Armstrong Accotex Cot that will help your frames produce their best. Why not talk it over with your Armstrong man today? Armstrong Cork Company, 6509 Dauphin Street, Lancaster, Pennsylvania.

Armstrong ACCOTEX COTS

. . . used wherever performance counts

CIRCLE NO. 37 READER SERVICE CARD



"Seconds" reduced with self-cleaning motor

New Louis Allis textile motor runs cooler, reduces lint pile-up, won't dry out ends

The new Louis Allis "Clean-Flo" textile motor is specifically designed to meet your mill requirements. "Clean-Flo" is totally enclosed — lint absolutely can't contact the inside of the motor.

"Clean-Flo" is cooler running than other motors, too. It's designed to mount a fan several sizes larger than normal to blow considerably more air across the motor. That means fewer cooling ribs are needed, so there are none on the bottom of the motor, and a further chance of lint pile-up is eliminated.

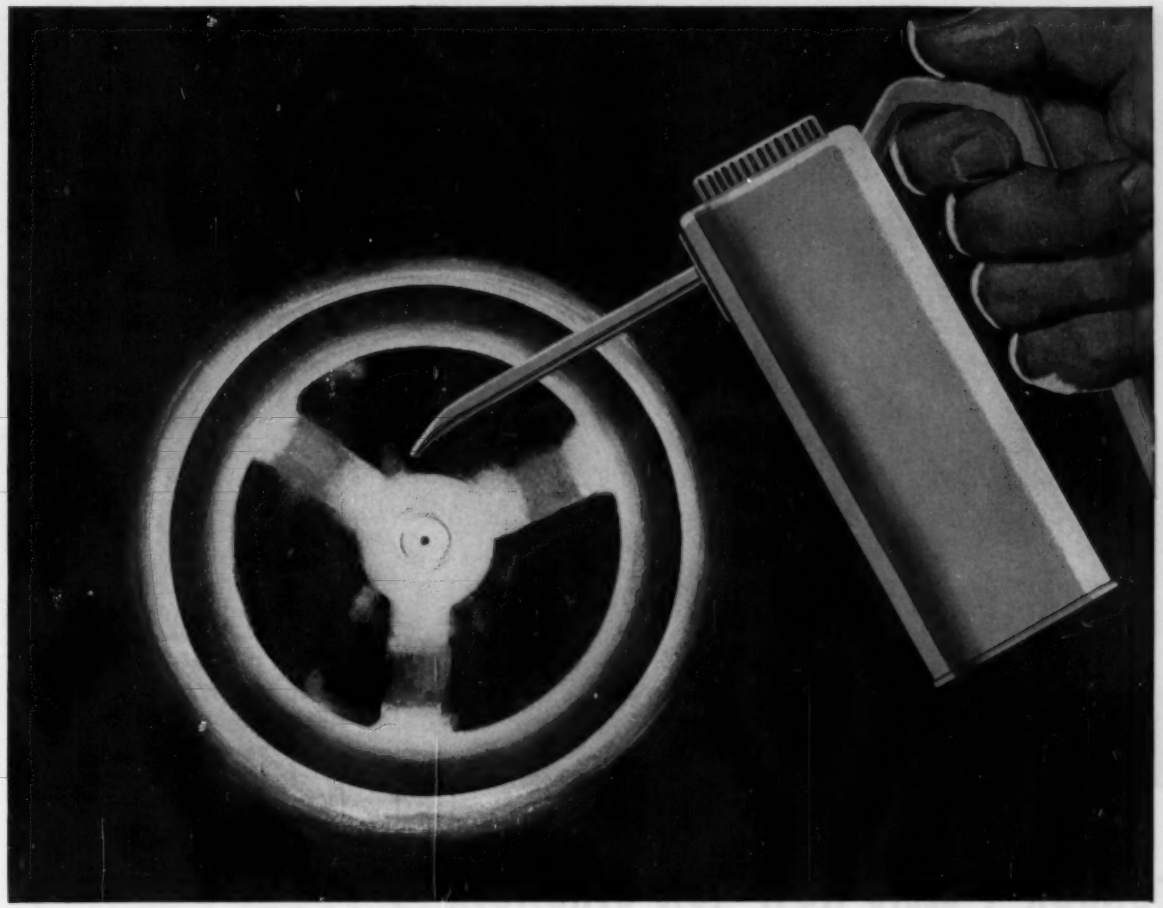
The big fan on the shaft extension end holds down any heat build-up, and limits the transfer of heat to the spinning frame. The motors pictured above are mounted to blow lint away from the driven machine so that spindles will not dry out.

The "Clean-Flo" is also available with "soft-start" characteristics needed in roving so that ends won't break. It's a built in feature — no extra control mechanism is needed to get the easy start.

Write for Bulletin 1850, "Clean-Flo Textile Motors" to your Louis Allis District Office, or The Louis Allis Co., 443 E. Stewart St., Milwaukee 1, Wisconsin.

LOUIS ALLIS

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES



Setting new standards in textile machine lubrication

NEW SHELL VEXILLA OILS

To assure high compatibility with today's synthetic fabrics, a completely new line of premium-quality textile machine lubricants has been developed—NEW SHELL VEXILLA OILS. These new oils are available in a wide viscosity range to satisfy all operating requirements.

Check these outstanding advantages:

1. Excellent Scourability—New Vexilla® Oils are *easily* and *readily* removed through conventional scouring procedures . . . completely eliminate oil stain problems.

2. High Oxidation Resistance—New Vexilla Oils contain special oxidation inhibitors to prevent increase of viscosity during service and storage. High viscosity index base oils minimize thinning out at high temperatures.

3. Eliminate Bearing Corrosion—New Vexilla Oils contain a newly developed rust inhibitor which keeps bearings *clean* and *free from corrosion.*

4. Non-Gummy—New Vexilla Oils contain no fixed oils such as lard, tallow and sperm oils to cause gumming. In automatic lubricating systems, they will not form harmful metallic soaps when in contact with zinc or copper.

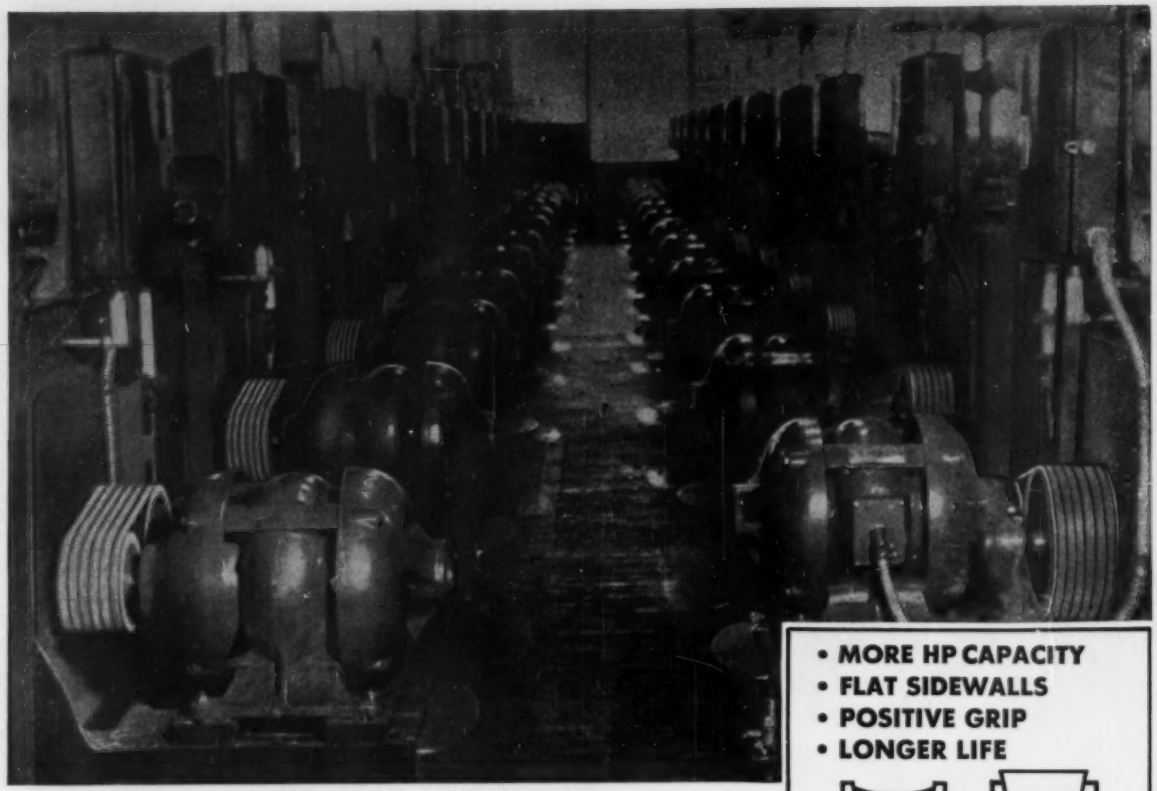
5. Outstanding Wetting Properties—New Vexilla Oils offer superior metal-wetting properties because of the carefully engineered balance of components and polar character.

The Shell Industrial Products Salesman will be glad to show you how to reduce maintenance costs and assist in the selection of the appropriate grades for *your* plant operation. Write Shell Oil Company, 50 West 50th Street, New York 20, New York. In Canada: Shell Oil Company of Canada, Limited, 505 University Avenue, Toronto 2, Ontario.

NEW SHELL VEXILLA OILS

. . . quality textile machine lubricants

SHELL



MORE GRIP...LESS SLIP

CONDOR V-BELTS NOW 40% STRONGER

Deliver More Horsepower at Standard V-Belt Prices

Condor V-Belt engineering makes the difference. R/M micro-positions belt strength members in special heat-dissipating rubber for a smoother, cooler running drive . . . and longer belt life under the heaviest drive loads. Condor V-Belt sidewalls are made *flat* to put positive pressure on sheave grooves for *more* grip, *less* slip . . . to assure maximum power delivery *without* costly power waste. Pre-stretching during manufacture removes any inelastic stretch that might otherwise occur. For users of longer length belts, C, D, & E cross sections are also vacuum-sealed in moisture-proof aluminum bags—*length certified* and fresh from factory to field! Specify Condor V-Belts . . . the smoothest running V-belts made for longer, trouble-free service and lower V-belt drive costs.

CONDOR ENDLESS BELTS—*On serpentine drives with short centers, small pulleys and reverse bends, Condor Whipcord Belts outlast as many as 10 ordinary flat belts. Exclusive Extensible-Tip cover splice and rubber rivets dissipate stress rounding pulleys . . . eliminate cover separation. Write for Bulletin 6869.*

- **MORE HP CAPACITY**
- **FLAT SIDEWALLS**
- **POSITIVE GRIP**
- **LONGER LIFE**

ORDINARY BELT CONDOR V-BELT

Note how Condor V-Belt at right prevents sag in the "power line".

1. ***All* cords of the strength member pull *equally* . . . deliver maximum, uniform share of power!**
2. **Firm sidewall pressure avoids power waste . . . MORE GRIP, LESS SLIP.**

THE SMOOTHEST RUNNING V-BELTS MADE!

Because Condor V-Belts ride properly in the groove, they run smoother, cooler . . . even on the toughest drives.

The flat sidewalls of Condor V-Belts insure that the lower, compression area of the belt properly supports the load-carrying strength members on a straight line, to permit all the cords to contribute their full share of the pulling power. This prevents premature failure caused by tighter cords being overworked. It also exerts a firm side-grip on the groove to avoid belt slip and power waste.

"More Use per Dollar"

Write for Bulletin 6868

RM-9...

BELTS • HOSE • ROLL COVERINGS • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls

for real.

HIGH PRODUCTION

at LOWEST productive cost

the WHITIN model M wool card

Mill after mill is setting new production records, using the new Whitin Model M Woolen Card. Available in 84", 72" and 60" widths, their many new features provide high quality roving and maximum efficiency, with lowest operating and maintenance costs.

For every type mill — men's wear, women's wear, rug or blanket mill, — there is a Whitin card designed to make maximum profits for you.

- New Tape Condenser — up to 192 ends on 84" width
- Variable speed Fancy Drive
- ATF Variable speed and V-belt drive for Int. Feed Table
- V-belt drives for strippers, breast, doffer, fancy and condenser
- Antifriction bearings throughout
- PIV Drive for Breaker Feed Rolls and Condenser also available

Member of American Textile Machinery Association

WHITIN machine works

WHITINSVILLE • MASSACHUSETTS

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

WHY ARE MILLS APPROACHING 10 ENDS DOWN PER 1,000 SPINDLE HOURS?

More and more modern mills accept 10 ends down per 1,000 spindle hours as a practical, realistic goal. Just a few years ago, such production efficiency was an impossible dream. Today, textile labs in these mills are equipped for continuous quality control in manufacturing.

As the number of ends down drops, spinners are reassigned, reworkable waste costs are drastically cut and profits rise.

How is the impossible becoming a reality? When lap, sliver, roving and drawing are free of weak spots, maximum spinning production follows.

The Uster Corporation demonstrates continuous control at all stages of yarn manufacture.

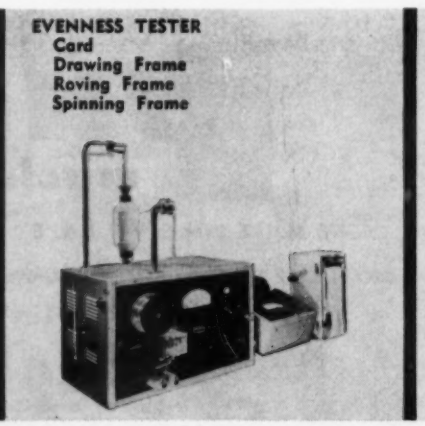
What is Continuous Quality Control?

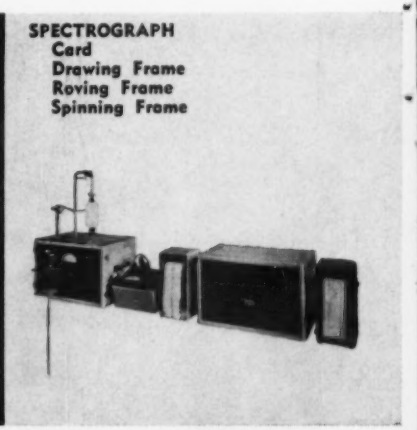
AT THE PICKER . . .

An inch of picker lap drafts into yards of finished yarn. Control of the lap automatically insures greater efficiency in later stages. The **Uster Varimeter** polices the lap inch by inch, indicates irregularities, offers continuous lap control, reduces neps, pinpoints mechanical faults, gives better control of yarn sizes with fewer doublings, reduces gear changes in processing.

AT THE CARD . . .

Control of sliver mass makes for smoother operation throughout manufacture. The **Uster Evenness Tester** offers precise scientific methods of controlling variations in the sliver. Mechanical difficulties in the card and card clothing show up quickly to improve production of the card. Sliver irregularities are indicated, neps are reduced, faulty settings and mechanical irregularities are revealed.





AT THE DRAWING FRAME . . .

Here is the last and most critical point of doubling control. Here it is important to spot mechanical troubles, define proper blend, predetermine roll settings and determine the effect of roll spacing, bi-directional drafting, humidity and draft. The **Uster Evenness Tester, Uster Spectrograph** and **West Point Cohesion Tester** team up to do these things. Production machinery settings, mechanical condition of machines and short to medium to long-term variations are proved.

AT THE ROVING FRAME . . .

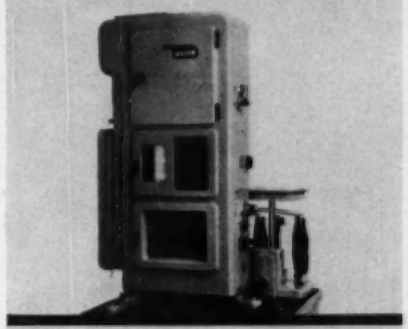
Improper drafts, settings and weightings are shown up by the **Uster Evenness Tester** and the **Uster Spectrograph.** Here is the latest concept in evaluating short, medium and long-term variations that determine precise quality control. Machinery settings are verified; mechanical faults are exposed. **West Point Cohesion Tester** eliminates numerous tests for fiber fineness, fiber length, surface characteristics, wax content, etc. Achieves optimum twists. **Uster's Custom Tension Recordograph** allows control of speed, most critical factor in production.

AT THE SPINNING FRAME . . .

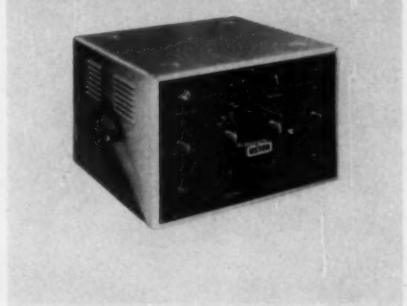
Final fabric appearance is irrevocably determined at the spinning frame. **Uster Evenness Tester** and **Uster Spectrograph** work together for fast and effective control of variations. **Uster Strength Tester** automatically registers individual values of breaking strength and elongation, sum of breaking strength and elongation and frequency distribution of breaking strength. 5, 10, 20, 40 tests per bobbin eliminate 90% of technician's time in single strand testing. **West Point Cohesion Tester** predicts drafting properties of synthetic, natural and blended staples. **Uster's Custom Tension Recordograph** shows up bad skewers and defective bobbin holders, reveals heavy travelers and grooved rings, produces extremely accurate adjustment of winder tension. Tension control in spinning, twisting, winding and spooling becomes critical as production is speeded. **Uster Imperfection Indicator** shows high and low count at any instant. Weak spots, excessive peaks, heavy spots and nep count in samples are easily shown. Yarn is inspected automatically.

TENSION RECORDOGRAPH
Roving Frame
Spinning Frame
Weaving
Quilling

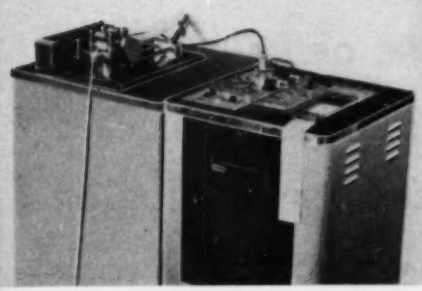
STRENGTH TESTER
Spinning Frame



IMPERFECTION INDICATOR
Spinning Frame



COHESION TESTER
Drawing Frame



The Uster Plan coordinates testing at every process.

You are cordially invited to our show rooms at

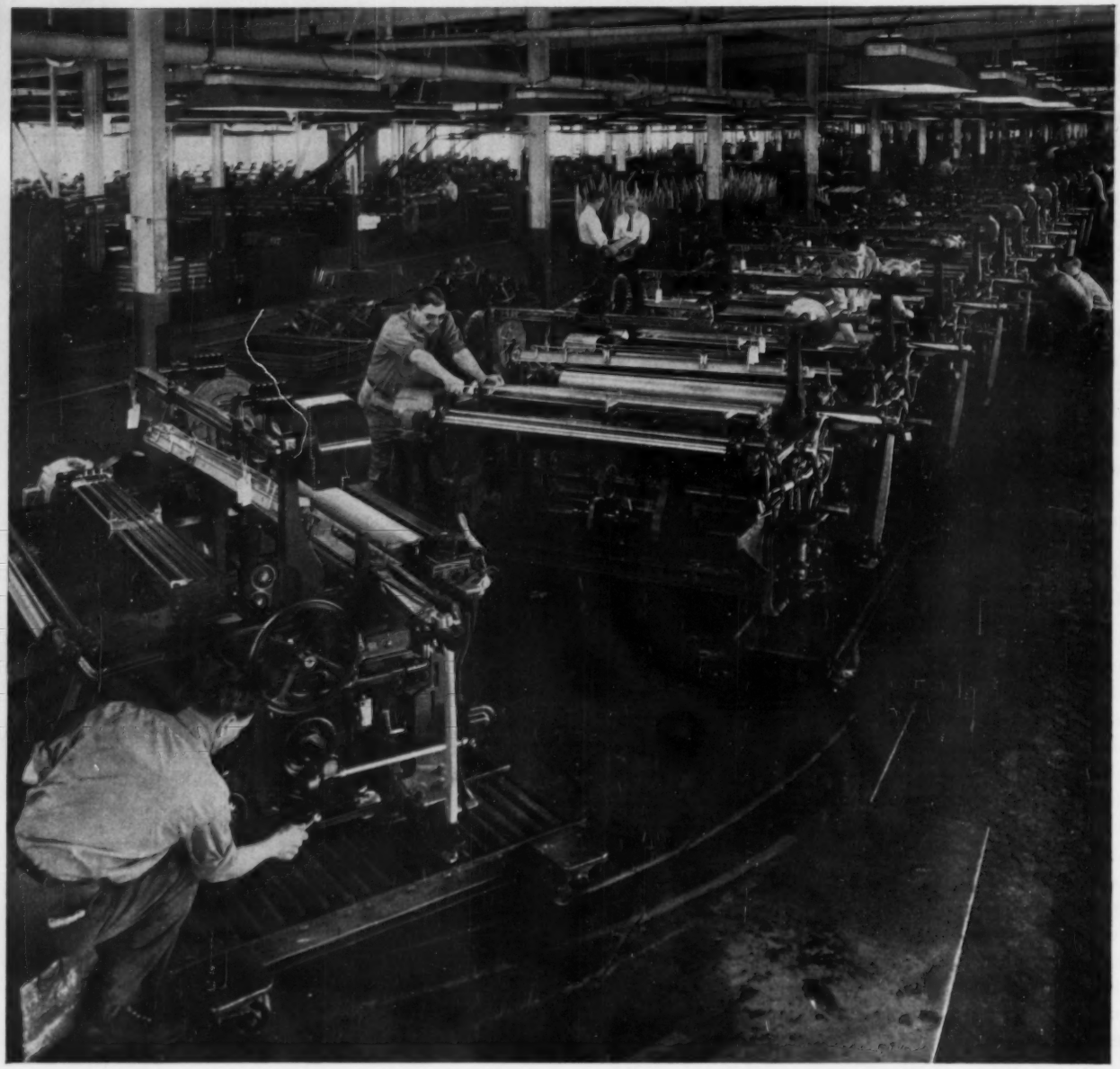
2229 Greene Street, Charlotte, N. C.

SALES OFFICES:

Canadian Sales Offices:
Hugh Williams & Co.
27 Wellington Street East
Toronto 1, Ontario

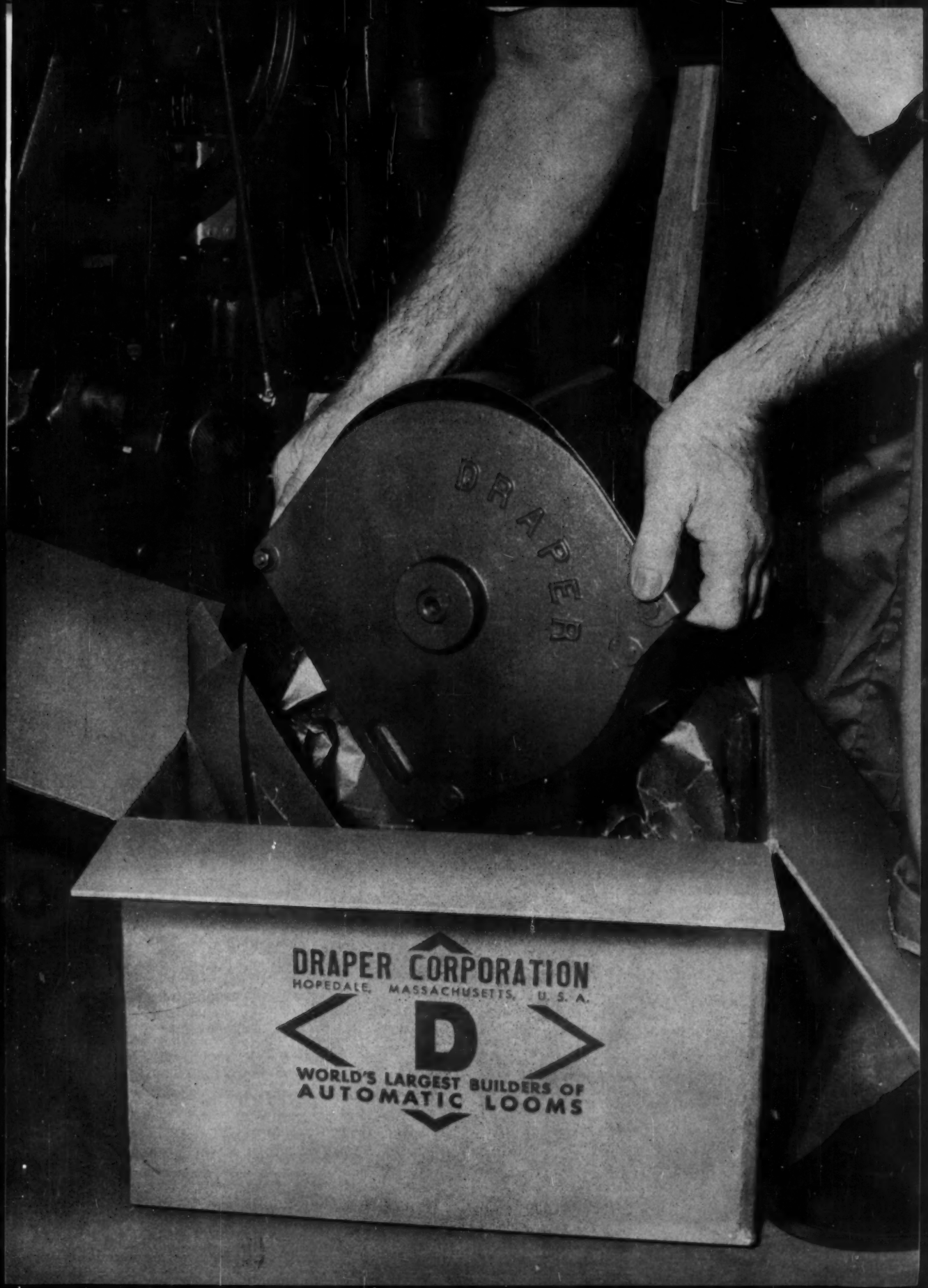
USTER

USTER CORPORATION
CHARLOTTE, NORTH CAROLINA



QUALITY OF ENGINEERING AND MANUFACTURE ARE TWO BIG REASONS WHY MORE AND MORE MILLS ARE SPECIFYING DRAPER LOOM PARTS EXCLUSIVELY. THE CLOCK SPRING TOP IS ONLY ONE OF MANY DRAPER MECHANISMS THAT AID IN INCREASING LOOM EFFICIENCY AND REDUCING COSTS. FOR ADDITIONAL INFORMATION ON THE CLOCK SPRING TOP OR OTHER DRAPER COST SAVING PARTS OR MECHANISMS CONSULT YOUR DRAPER REPRESENTATIVE TODAY. • **DRAPER CORPORATION**

CIRCLE 44 ON READER SERVICE CARD


DRAPER
DRAPER CORPORATION
HOPEDALE, MASSACHUSETTS, U. S. A.
D
WORLD'S LARGEST BUILDERS OF
AUTOMATIC LOOMS

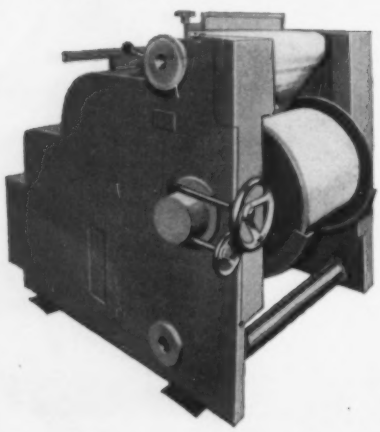
Good fabrics begin with good warps...

Good warps are made on these *Kidde* machines

KIDDE CREELS
Custom built to your requirements. Will handle any package made today.

KIDDE WARPER
Versatile . . . for all yarns. Smooth operation — easy doffing.

FOR KNITTING:
Deliver from the Kidde creel to one of the Kidde Tricot warpers (there's one for every size spool). Finish the operation on a Kidde Knitter.

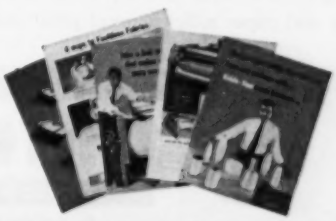


Kidde

KIDDE SLASHERS
For cotton or silk system slashing . . . constructed to meet your requirements.

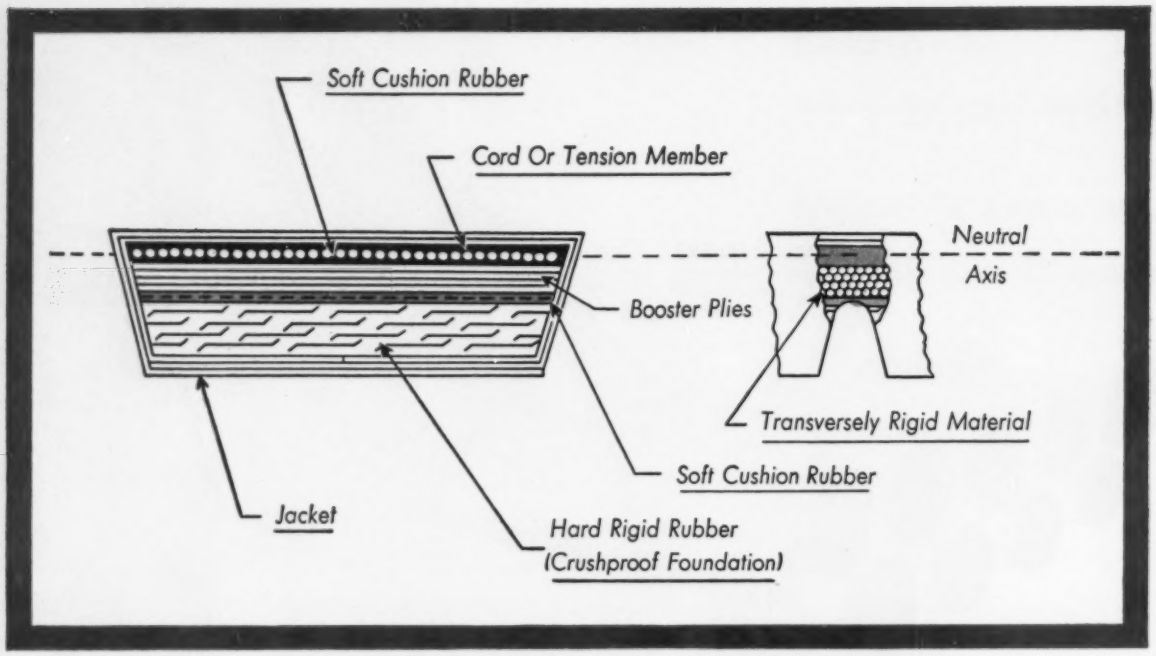
Here's the formula for good warps . . . Start with any package . . . put it on a Kidde creel . . . deliver it to a Kidde warper . . . run it thru a Kidde slasher. You'll then have the kind of warp essential to the production of top quality fabrics. Of course, the creels, warpers and slashers may be used separately . . . but, for the finest results, maximum versatility and highest production they're designed to work together.

The key to any warping operation is accurate, uniform tension. To set the proper tension for the yarn being run, and for checking it during operation, Kidde Tensometers are essential. There's a full line of them; one is just right for every tension problem.

Want complete information on how to get the most out of your warping operation? Write to Kidde for literature describing the finest equipment made.

TEXTILE MACHINERY CORPORATION — BLOOMFIELD, NEW JERSEY

CIRCLE 47 ON READER SERVICE CARD

US ROYAL VARIABLE SPEED BELT



HERE'S WHY THIS VARIABLE BELT IS NON-SQUASH, NON-SAG

No excuse for any more variable speed belt problems. The U. S. Royal Variable Speed Belt will lick any production problem – where other belts try and fail.

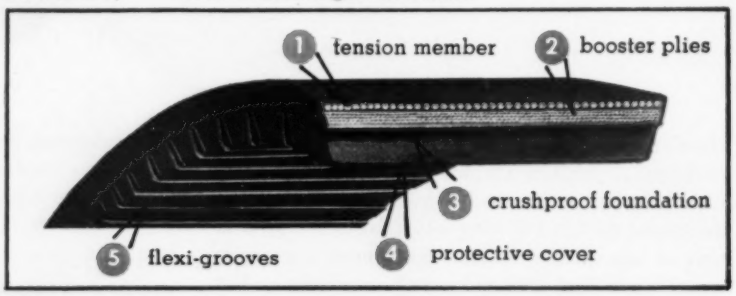
Note in the diagram the use of hard rigid rubber – the soft cushioning rubber in which cords or tension members are imbedded – the special jacket (oil and heat resistant).

The exclusive and complete crosswise rigidity in U. S. Royal prevents squashing. Lengthwise stretch is just about zero, by every test. *No sagging.*

U. S. Royal has complete accuracy regardless of speed changes – whether you switch from 2000 rpm to 10. It has scored a complete success in every textile mill, pulp and paper mill, chemical plant and metal working plant in which it has been installed.

• • •

Your nearest "U.S." Power Transmission Distributor will be glad to demonstrate the U. S. Royal on your own drives, at your own plant. You'll save a great deal in replacement costs and down goes downtime.



Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

New Step in Man-Made-Fiber Information

This month marks the time for the biennial revision of TEXTILE WORLD's Man-Made-Fiber Table. For as long as man-made fibers have been an important factor in the textile industry, this Table has been revised and published every other year to keep the industry up to date on the changing fiber picture.

In some respects, this revision of the Table is more important than any revision made in recent years.

The fiber picture is more confusing now than ever before because of the sheer number of different fibers and different types of fibers.

More mills are running more different fibers than ever before, and changing market demand is steadily causing still more mills to add new fibers or to switch fibers.

This year, too, the government stepped in to put the Federal Trade Commission right in the middle of the fiber activity as a referee in defining types of fibers, labeling textile products by fiber content, and disclosing fiber types in advertising textile products.

All of these things add up to confusion and a greater need by more people than ever before for easy-to-use, authoritative information on all the man-made fibers in commercial production in the United States.

The New Fiber Table

In this year's revision of the Fiber Table, a new dimension in vital fiber information has been added.

One of the greatest values of the Table through the years has been the fact that properties of different fibers are described under headings common to all fibers on the Table. The net result of this method of listing fiber properties is that any given property of any commercial fiber can be quickly found. If desirable, that property of the given fiber can be quickly compared with the same property of all other commercial man-made fibers.

But a tabulation must of necessity limit information to fundamental facts about the fiber itself and its qualities as a fiber. It cannot give vital information, desired and needed by users and prospective users, on such things as running qualities, end uses, commercial advantages in certain uses, etc. This kind of information must be obtained by some other means than from the Fiber Table itself.

This year, we have tried to correct this situation by supplying this type of information in copy written and published by the fiber producers themselves along with the Fiber Table.

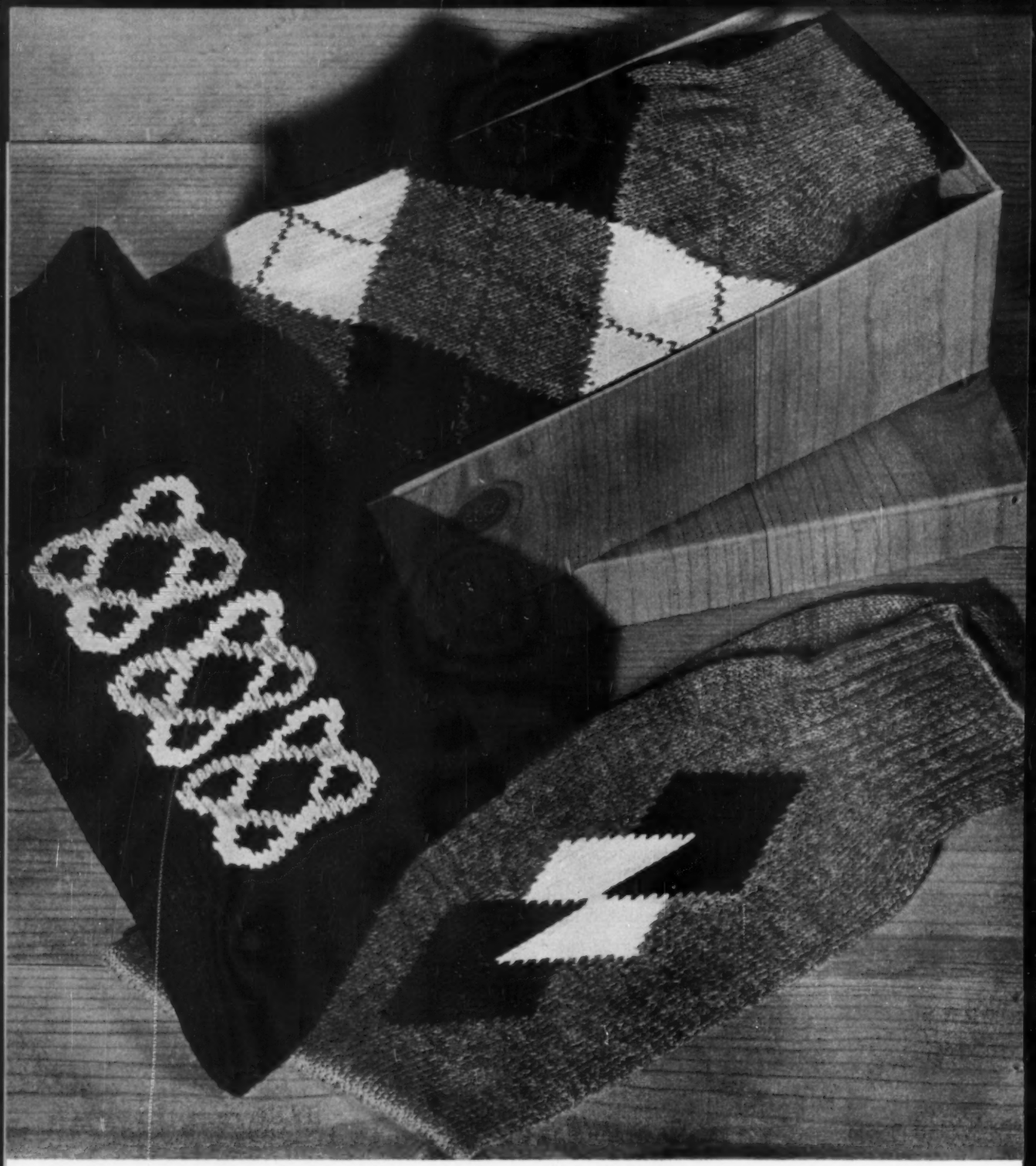
The New Fiber Section

The 1959 revision of the Man-Made-Fiber Table is published on p. 69 of this issue. It follows exactly the same pattern as previous revisions, but this year the page that binds it in TEXTILE WORLD is perforated so that the whole Table can be easily removed and placed on a wall or under glass on a desk top.

But in addition to the Table itself, we publish this year for the first time, along with the Table, an entire section of informative advertisements by fiber producers in which they give additional technical and commercial information on their fibers. Emphasis is on end uses and fiber properties that make the fibers commercially successful—information that is either not contained or is not emphasized on the Table itself.

This TEXTILE WORLD Man-Made-Fiber Section is unquestionably the most complete, authoritative, and useful concentration of technical and commercial fiber information ever published. Few people, in or out of the textile industry, with an interest in man-made fibers will be without it.

A. M. Thomas



INLAID PATTERNS with the "hand-frame look"

For increased pattern possibilities in argyles, overplaids, and diverse inlaid pattern socks, you need the versatile "READING" CK-A. It gives you the "hand-frame look" with beautiful stitch construction, straight-edge color separation, clean-edge circular sutures. It's the fastest producing inlaid pattern machine. Available in 84, 112, or 168-needle count, with 3¾-inch diameter cylinders.

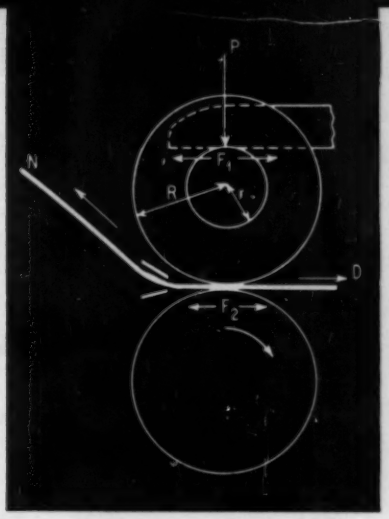
Knitting Machine Division
TEXTILE MACHINE WORKS • READING • PENNA.
Builders of Textile Machinery Since 1900

The "READING" CK-A
Circular Knitting Machine

CIRCLE 50 ON READER SERVICE CARD

Roll Slippage Causes Variation in Yarn

• Some spinners blame long-term irregularities on preceding processes when the actual cause is roll slippage. Here's a theoretical approach to the problem that may help you produce more-even yarn by applying the principles set forth.



FORCES that affect roll slippage include friction, drafting pull, bobbin-holder drag, and saddle pressure.

By N. H. POMFRET

SPINNERS GENERALLY ARE WELL AWARE OF THE FACT that there is no perfect drafting system and that each machine changes the pattern of variation.

The introduction of electronic evenness testers focused attention upon short-term variation, with the result that long-term irregularity is often neglected. It is a common fallacy to assume that machines or processes introduce short-term variation only and that long-term variation is caused by earlier processes or the number of doublings.

Poorly lubricated or choked top front rolls slip and revolve slower than the intended speed, and the yarn produced by such rolls is coarser than that made on the rest of the frame. The obvious coarseness of such yarn is normally detected by the frame operator who makes the necessary corrections.

Slippage of the back top roll is a different matter, however, since it is much more difficult to detect. It is probable that this roll slips forward rather than backward. Cleaning and lubricating the roll will not correct the fault as easily as for the front roll.

Formulas Explain Forces

To get a visual picture of the principal forces at work on the back top roll, look at the diagram.

If:

F_1 = friction between the saddle and the top-roll boss

F_2 = friction between the top and bottom rolls

r = radius of the top-roll boss

R = radius of the top roll

D = drafting force

N = resistance caused by friction of the bobbin holder, creel guides, and traverse-motion eyelet.

P = pressure applied by the saddle

Then:

The surface speed of the top roll should not be less than the surface speed of the bottom roll, or

$$R(F_2 + D - N) > F_1 r$$

In other words, the grip of the fibers by the rolls and the drafting force added together must be sufficient to pull the roving bobbin around and overcome the friction created by the pressure of the saddle on the top-roll boss. If these forces are not strong enough, the top roll will revolve slower than the bottom, the roving will not be fed fast enough, the draft at that particular roll will be too high, and the numbers will be too fine.

The surface speed of the top roll should not be greater than the surface speed of the bottom roll, or

$$R(F_2 + N) + F_1 r > RD$$

Here the grip of the fibers by the rolls and the friction at the roll boss, depending upon the magnitude of the drafting force D, may act in either direction. When D is large enough to overcome the opposite forces, the top roll will slip forward, the roving will be fed too quickly, the draft will not be high enough, and the numbers will be coarse.

Speeds and Drafts Vary

On each spinning frame, there may be from 100 to 200 front and back top rolls; and it is entirely possible that no two rolls will have exactly the same surface speed and draft. In many instances, the differences in surface speeds of the top rolls are so slight that they are of no importance. In other instances, the differences may be large enough to cause trouble with number variation.

To check the efficiency of the drafting system, maintenance, and roll settings, compare the coefficient of variation of the stock before and after drafting. Be sure that the same type of variation is being compared. For example, compare the CV% between the weights of 120-yd. lengths of yarn with the CV% between the weights of 120-yd. lengths of roving divided by the calculated draft.

For example, if 32s yarn is being spun from 2-hk. roving, it is necessary to compare the CV% between 120-yd. lengths of yarn with the CV% between 7½-yd. lengths of roving. If no appreciable slip is taking place, then the two CVs will be approximately the same.

When the front roll slips, it is almost invariably a backward slip because the tension of the yarn (the only force tending to make the yarn slip forward) will cause excessive end breakage before the force is large enough to make the roll slip forward. Evidence of backward front-roll slip is found in long lengths of coarse yarn with excessive twist.

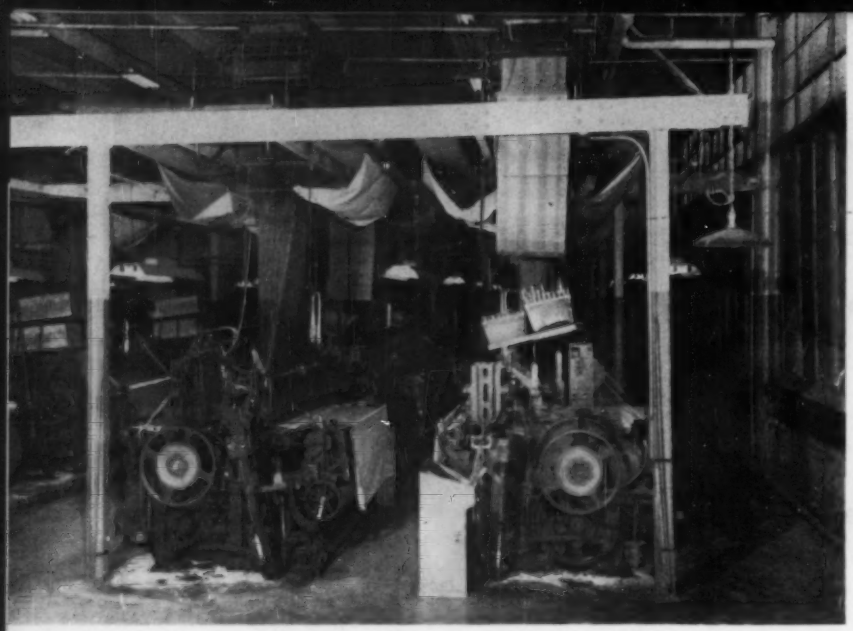
Roll Can Slip Either Way

The back top roll may slip either way: backward when the tension of the roving is excessive or the aperture of the traverse eyelet is too small for the diameter of the roving or forward when the drafting force is excessively high. The most common direction of slippage for this roll is forward.

There are several factors contributing to the forward slippage:

1. Spinning man-made fibers on

CONTINUED ON PAGE 205



C-4 LOOMS have jacquard motions and run three colors of filling pick-and-pick at bobbin-changing looms.

Weaving Upholstery Fabrics On a Big Scale at Bartson

• Most weavers of upholstery fabrics are small because styling is so difficult. But this fine-goods mill has 144 modern looms in one plant. Here's how yarn and weaving are handled in big production—

LUXURY FABRICS WOVEN SIDE BY SIDE with stock-delivery styles aren't unusual at the Lavonia, Ga., Plant of Albert J. Bartson, Inc. For example, Bartson wove the furniture upholstery in the Presidential Suite in the St. Francis Hotel in San Francisco especially for President Eisenhower's recent visit there.

Bartson claims to be the biggest weaver of upholstery fabrics; this claim comes from three important and progressive steps made the past 10 years. The company:

1. Shucked off its older Charlotte, N. C., mill by selling it.

2. Concentrated manufacturing in Lavonia by de-emphasizing production in its Midland Park, N. J., plant.

3. Set up a central styling department in Midland Park.

The styling center in Midland Park is Bartson's key to higher sales because Midland Park is near Bartson's New York sales office and jacquard cards are made quickly there on its electronic card-punching machine [TEXTILE WORLD, June '58, p. 59].

What Makes Bartson Grow?

Modern machines and streamlined methods are giving Bartson a competitive edge at Lavonia in weaving jacquard upholstery fabrics. A volume-production group of fabrics for stock deliveries is made in 30 designs and 20 colors. These constructions include textures and matelasses.

But in the weave room at Lavonia, styles are so numerous and varied there's scarcely a duplication of styles on the 144 looms. Fabrics woven include novelty textures, tapestries, brocades, damasks, and satins.

Over 1,500 designs are now active at the mill; jacquard cards are available to put these designs on the loom within 24 hrs. Warps have as few ends as 1,500 and as many as 10,240. Over 1,000 different colors and shades of yarn are stocked.

Typical warp-yarn numbers are mercerized cotton 40/2 and 60/2; spun rayon 12s and 40/2; filament rayon 150 den.; and filament nylon 140 and 200 den.

Ordinary filling-yarn numbers are cotton 2/2, 5/2, 8/2, and 14/2; spun rayon 16/2, 20/2, and 12s; filament rayon 300 den.; and filament nylon 200 den.

Two Warping Systems Are Used

Bartson buys all its yarns. Warping is by two systems: (1) cotton and (2) warp compressing.

Although its high-speed cotton warper will run 600 yds. per min., best results are obtained at 200 to 300 yds. per min. Creels are for 800 active ends and 800 ends being creeled. Warps are slashed on a combination slasher-pad dyeing machine.

Filling is wound by two systems: (1) automatic bobbin winding with automatic bobbin loaders and (2) cop winding.

Three automatic winders run at 2,500 rpm. on nub yarn and increase in speed to 4,500 rpm. on, say, 200-den.

filament nylon. The largest machine has 120 spindles. Bobbins are 8¾ ins. long and 1 in. in diameter.

These bobbins are run on all bobbin-changing looms, both 4x1 and pick-and-pick.

Old Bobbins Make Good Cops

Filling cops are wound for pick-and-pick looms where filling is changed by hand because more filling can be put into each shuttle. Cops are 9 ins. long and 1¼ ins. in diameter.

Better control of filling at the cop winder and at the loom is obtained by a cop developed at the mill: damaged wood bobbins from automatic looms are cut off to an over-all length of 1¾ ins. from the end of the butts.

Pick-and-Pick Is Automatic

All the 144 looms are C-4 looms 68 ins. wide and run 130 ppm. Looms are operated in three ways: (1) 4x1, (2) three-color pick-and-pick automatic bobbin changing, and (3) pick-and-pick hand changing.

On the three-color pick-and-pick automatic setup, Bartson has made several loom modifications.

On 4x1 looms, weavers fill their own magazines. But so that weavers can give constant attention to fabrics being woven, magazine hands fill magazines on three-color pick-and-pick looms.

Weavers run six looms on looms running as 4x1 bobbin-changing looms and on three-color pick-and-pick bobbin-changing looms. On pick-and-pick hand-changing looms, weavers have two to three looms. Loomfixers tend 24 4x1 looms and 18 three-color pick-and-pick looms.

All Looms Have Jacquards

All looms have fine-index jacquard motions with 1,304 hooks. The first jacquard cards of every pattern are cut in Midland Park and are sent to Lavonia. Then duplications are made at Lavonia on a repeat-cutting machine.

Let-offs are chain-driven full automatic. Yarn beams are 58 ins. between heads, and most fabrics are 54 ins. wide.

The newer polyethylene pickers are being tested at the mill, and Juel W. Cochran says: "Although these pickers cost more than our older conventional pickers, they're lasting more than twice as long. Loom-maintenance time has been cut greatly. Shuttles seat in the pickers better, and therefore weaving is improved.

"We haven't had any trouble with increased shuttle wear or with shuttle spurs coming loose. Our only maintenance on our original test pickers that have been running several months has been to replace some of the nylon bushings."

Mill Is on One Floor Level

Shuttle fur is used in all looms that transfer filling bobbins automatically. The fur is used on cotton, spun-rayon, and all filament man-made fibers. Copped filling is run without shuttle fur, and bristles are used.

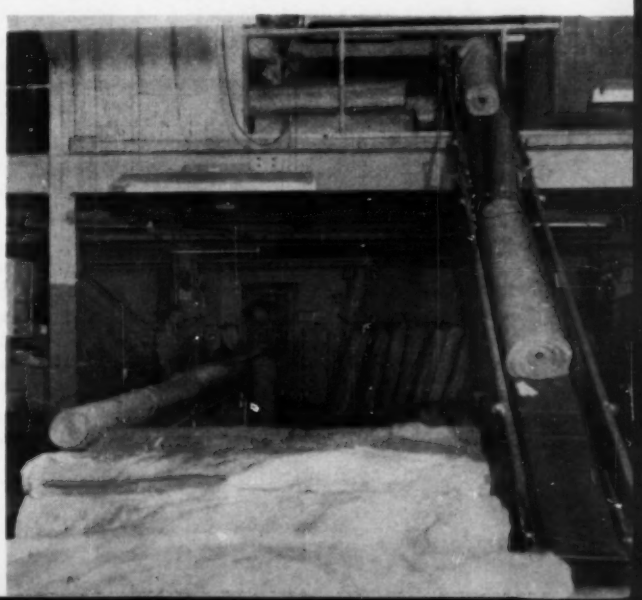
The Lavonia structure covers 70,000 sq. ft. in one floor level. Machines are placed for virtually straight-line flow of yarns and fabrics. Results are economical and efficient production.

Albert J. Bartson, the company founder, has recently stepped aside to make way for an essentially young organization starting with Frederick W. Thomson as president and general manager and Robert W. Richards as treasurer.

FILLING is wound on automatic winders with automatic bobbin loaders. Spun and filament rayon are run side by side.

FABRIC is inspected in rolls on machines as it comes through slots (arrow) in the wall between the weave room and cloth room.

NEW CONVEYORS in the cloth room take fabric from inspection machines to shipping at the left or to temporary storage on the mezzanine.



Modern Painting Trends

• If you're still thinking of painting as: "Paint it any color that will last and won't show dirt," you're away out of date. The modern practice is: "Paint it the proper color harmony that results in maximum benefits."

COLOR HARMONY IN PAINTING is an answer to some of management's headaches. A drab interior and exterior repainted in color can reduce labor turnover, cut absenteeism, increase worker efficiency, improve products manufactured, and reduce worker dissatisfaction.

Color in the right places in the right combination has become an important phase of industrial painting. Although management may be disturbed at the suggestion of painting exteriors and interiors pink, rose, yellow, or flat maroon, these combinations have proved valuable.

Sometimes color can cut down on the amount of artificial lighting needed. In one plant with a 20-ft. ceiling, the ceiling was repainted a soft light green and the walls ivory. The resulting diffusion gave much more light at working levels and reduced the need for artificial light.

Color can also give better housekeeping. Where dirt is easily visible, employees cause less of it or clean what is present.

Skilled Painters Are Necessary

Management's best returns from painting come from proper paints applied by skilled workmen under competent supervision. Giving a man a can of paint and a brush doesn't make him a good painter; and if he isn't, management loses.

No large plant should be without a skilled painting crew. There are always retouch, clean-up, and emergency jobs to be done.

But periodic painting jobs raise a problem as to who should do them. Basically there are three answers: (1) keep a large force of painters steadily on the payroll, (2) augment a small regular painting crew temporarily, or (3) call in an outside contractor.

The frequency of painting is greatly variable. A precise time element for a minimum schedule is based strictly on the life of any given paint coating for an individual plant.

Painting Has Many Values

Factors to consider are the value of improved lighting, worker efficiency, and better public relations. Often it costs more not to paint than to paint.

Interior painting is for protection or good housekeeping, or a combination of both. Interior surfaces are highly vulnerable to deterioration and must be painted to avoid expensive repairs.

Unclean surfaces flake, powder, sweat, engender mildew and mold, or harbor undesirable odors. The frequency of interior painting can be reduced by washing and scrubbing soiled surfaces. This practice serves two purposes: (1) the existing paint surface lasts longer and (2) money is saved in surface preparation when repainting is done.

A surface is not really painted unless there is a bond between the surface and the coating material. When this union is lacking, the surface is merely covered and little protection is given.

A properly painted surface provides maximum protection against deterioration and wears well so that as the paint film gradually becomes thinner it remains fixed to the surface. And if repainting is done before the film is too far gone, surface-preparation cost is reduced.

Ordinary dirt, dust, and a microscopic grease film are the most prevalent obstacles to paint adhesion. Heavy traces of grease must be scrubbed off. Extremely light grease films can be dissolved with a paint that contains a solvent, or the grease can be completely dispersed throughout the paint film. This method requires two coats of brushed-on paint.

In some textile departments where high humidity prevails, mold and mildew are common. In these areas, the surface is of great importance. The first step is complete removal of all dust and dirt not only from the surface to be painted but from the entire section. Then the surface to be painted is washed down with a strong solution of formaldehyde.

Proper coating protection is provided by vinylite, resin, or rubber-base compositions. Then to keep mold and mildew from forming, wash the surfaces periodically with a mild solution of formaldehyde. In some mills, this treatment may have to be done every few days; in others, every six months is often enough.

Protection Must Be Constant

In these high-humidity areas, as in acid and caustic exposure, the surfaces must be repainted before they lose their film protection. If painting is delayed too long, plant deterioration and eventually plant abandonment will result.

When film protection is lost, no satisfactory repainting can be done while the humid condition prevails. Therefore the plant must be shut down.

But interior moisture is not always that hard to beat. A rayon-manufacturing plant in Virginia needed repainting only because of a mildew condition. A shutdown was apparently needed; but since a shutdown was too expensive, further studies were made.

The condensation that nurtured the mildew was present only when temperatures outside the plant were markedly lower than inside. A successful solution was to paint the plant in the spring when exterior and interior temperatures were close together and condensation was at a minimum.

There is no use painting over surfaces, not matter how clean, if there is exterior water seepage. This mois-

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Based on an article by Arthur R. Cannon in McGraw-Hill Maintenance Engineering Handbook

ture builds up pressure under the paint film, and it bulges or flakes off.

Vulnerable points are cracked masonry, areas around window sashes, and where pipes pass through walls. They must be waterproofed from outside before inside surfaces are painted.

On the outside, critical areas are joints between frames and walls and damaged putty. When the edge of a penknife can be forced between window glass and sash, the putty should be replaced.

Paints have only two uses: protection and decoration. Whether they are used for one or a combination of these purposes, the composition of the coating is to varying degrees basically the same.

There Are No Miracle Paints

Paint is made of two broad components: (1) pigments or solid powders and (2) vehicles (carriers) that transfer the pigment onto the surface.

Miracle paints do not and probably never will exist. All combinations, even specially made paints, have some drawbacks.

The results are still compromises. But your constant aim must be to keep the compromises to a minimum to assure a high-quality job.

Paints commonly used in plant maintenance fall within the following broad general categories.

Interior wall and ceiling finishes are titanium-base pigmentation in synthetic-resin vehicles in whatever combination is necessary to produce flat, semigloss, or gloss finish. Flat finishes have less glare than gloss finishes, but semigloss and gloss have a higher degree of washability.

1 Coat Gives General Clean-Up

One-coat self-priming flat finishes are commonly used today for general clean-up work, which is to freshen things up.

Where color isn't important, aluminum pigments are becoming acceptable, especially in heavy manufacturing industries.

Paints for interior metalwork, trim, doors, and windows are combinations of various pigments (determined by rust-preventive qualities and color requirements) in a harder-drying synthetic-resin vehicle.

Lead, zinc, or titanium pigment in a linseed-oil vehicle is the accepted combination for exterior woodwork, particularly in whites and tints of white.

Dark colors such as chrome greens, browns, blacks, etc. are preferred in alkyd-resin vehicles. The better grades of exterior paints for metal are also desirable in an alkyd-resin vehicle. Alkyd coating is the most widely used general maintenance paint.

Chemicals Need Special Paint

Alkyd has exterior durability, is economical in cost per square foot, has good film thickness and density, and is flexible with oil. It also has good drying characteristics and color retention.

But on the negative side, it has low chemical, caustic, acid, and moisture resistance. Therefore alkyd is most useful when it is not exposed to these elements.

Phenolic-resin coating answers chemical problems. It is hard and brittle, flakes very easily, and has poor film qualities. But when it is cooked with linseed, tung, or dehydrated castor oil, it forms a good film that drys well, is hard, and has high chemical and salt-spray resistance.

Disadvantages of phenolic coating are that it chalks on exterior exposure and becomes brittle as it ages. It is also unsuitable for white and pastel colors because it yellows with exposure for an unsightly appearance.

Vinyl coatings are the most chemical-resistant paints available today. They are durable and have good resistance to solvents such as grease, alcohol, turpentine, painter's naphtha, gasoline, and light hydrocarbons in general. They swell in aromatics but return to original shape and form. They dry rapidly for recoating; and in mil-for-mil film-thickness comparisons, they are the most water-resistant coating.

But vinyls are not perfect. Their film-thickness qualities and their brushing qualities are poor. Continuous inspection is necessary for proper application.

Another coating with good qualities is chromated rubber. It drys fast for recoating, is flexible, and is heat and moisture resistant.

Like paints, a primer does certain things well; it prevents rusting, provides a good surface for paint, helps provide film thickness to the finished job, makes a moisture barrier, and prevents rusting.

Red lead, zinc chromate, and vinyl butyral are common base primers. It is almost impossible to have all the desired characteristics in a good primer, but it is important to select the best primer available for specific applications.

Humanics — A TW Brief

Off-the-Job Safety Is Important, Too

In proportion to the amount of safety training in the plant, off-the-job safety gets very little attention. When mill management does recognize safety at home or on the highway, it usually does so more as a gesture of good will than with any thought of obtaining concrete results.

Of course when accidents happen on the job, the mill is more or less responsible and has to pay, either directly or in the form of insurance, for loss of time and for medical care.

But regardless of where an accident happens, it causes certain production problems. The employee may lose time from work, or his efficiency may be impaired.

And with all the safety guards, devices, and protection in the plant, the employee stands less chance of getting hurt on the job than he does when not working.

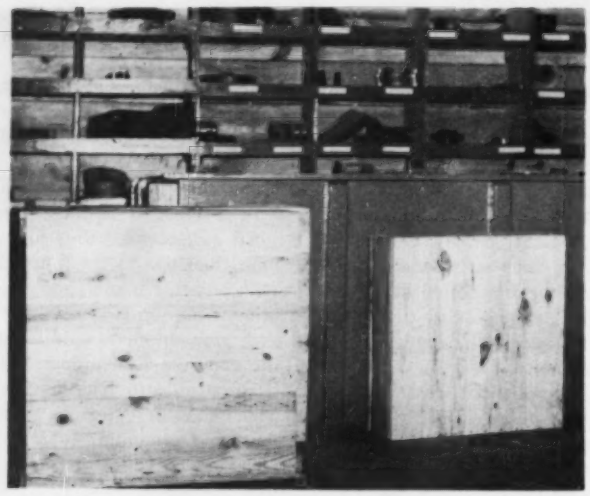
The employee who is injured off the job has more financial worries and will often try to return to work too soon. His ability and morale often suffer, and management feels no obligation to help him through this difficult time.

So it is just good business to emphasize both plant and off-the-job safety in training programs, posters, and other forms of safety education—GEORGE M. DODSON

Card-Grinder Training—

How To Clothe Cards

PREPARING TO CLOTHE THE CARD



STORE THE CLOTHING . . .

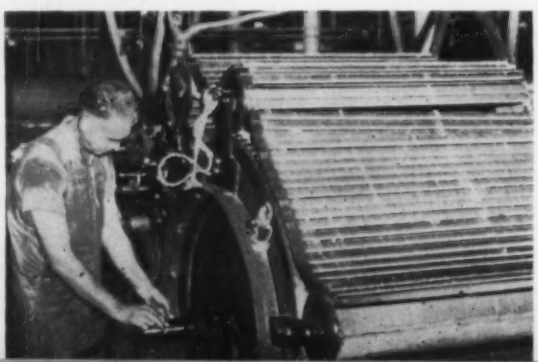
. . . until it is needed in a warm, dry place and leave it in the original wrapping and packaging case. Some mills prefer to remove the clothing from the wooden packing case and store the paper-wrapped rolls in a metal-lined box. But the main point is to keep the clothing warm and dry until it is ready for use, regardless of the method used.

CONDITION THE CLOTHING . . .

. . . in a doffer box or other suitable container for at least 24 hrs. at card-room temperature (not less than 85° F.) before putting it on the card. The fillet should be carefully unwrapped and unwound. Careless unwrapping, unwinding, cutting the taper, and threading can do much damage.

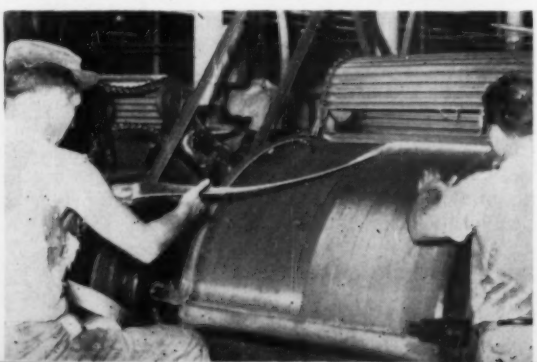
CUT OUT THE FEED . . .

. . . and strip the cylinder and doffer with the stripping roll. Run out the stock and stop the card. Remove all waste under the card, between the frame sides, and inside the flats. Clean all parts of the card thoroughly; and remove belts, pulleys, and other demountable parts. Replace worn bearings and shafts if total wear exceeds the normal setting.



REMOVE CYLINDER CLOTHING . . .

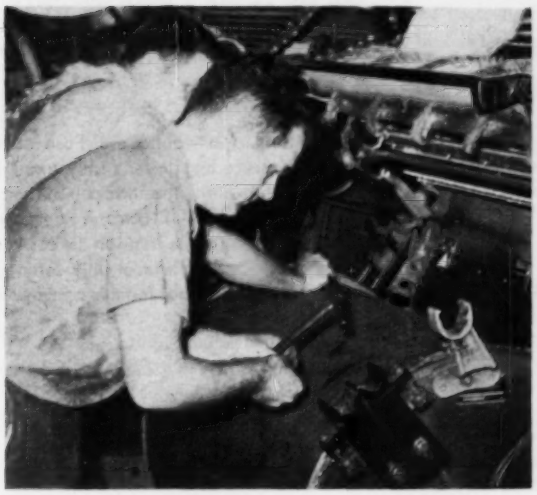
. . . after the flats are taken off and carefully placed in a box; then remove doffer clothing. Align and level the card. Space the cylinder evenly between the frame sides, and line up the doffer with the cylinder. Chalk the outside faces of the cylinder to indicate the positions of the plugs. Mark off the plugs across the cylinder on a straight stick for use as a guide in nailing.



Clothing a card requires skilled operators who know their jobs. If clothing is not properly conditioned and put on just right, chokes may tear the expensive clothing to pieces and cause heavy production losses.

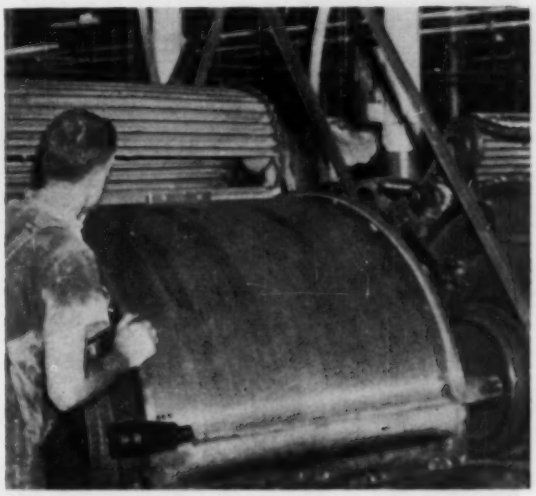
Pictures and captions on these pages should be helpful to card-room overseers when it is necessary to train new card grinders. The article shows how to—

- Condition the clothing
- Replace bad plugs
- Take off old clothing
- Put on new clothing



REPLACE BAD PLUGS . . .

. . . that are oil soaked, worn, or loose. Drive shoe pegs into old tack holes, and finish new plugs even with the cast-iron surface because high plugs damage clothing. Use care in sawing plugs so as not to scar the cylinder. Cut off selvage plugs even with the underside of the cylinder. Carefully select plugs because different makes of cards require different-size plugs.



CHECK CYLINDER SURFACE . . .

. . . to make sure that it is not out of round. Do the same for the doffer surface. Cylinders and doffers that are out of round more than 0.005 in. should be surface-ground to prevent unnecessary grinding of the fillet wire and to assure good settings. Some mills find it helpful to paint the cylinder and doffer surfaces with oil-free white-lead paint. Be sure the paint is dry.

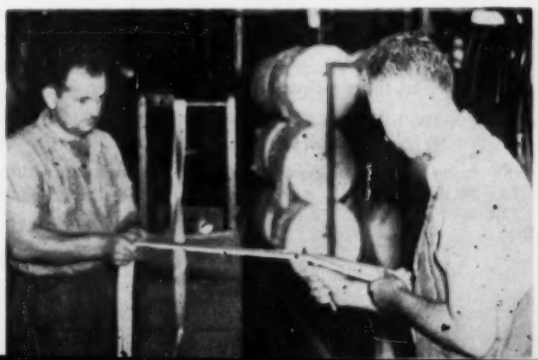
APPLYING THE CARD CLOTHING

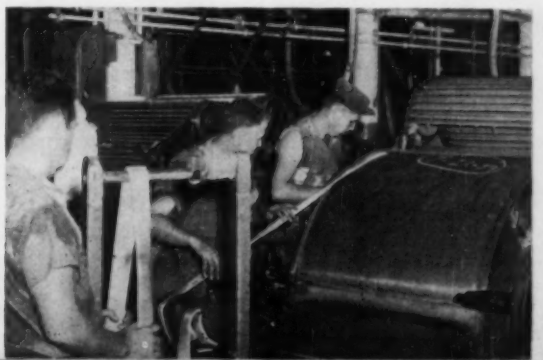
CUT THE TAPER . . .

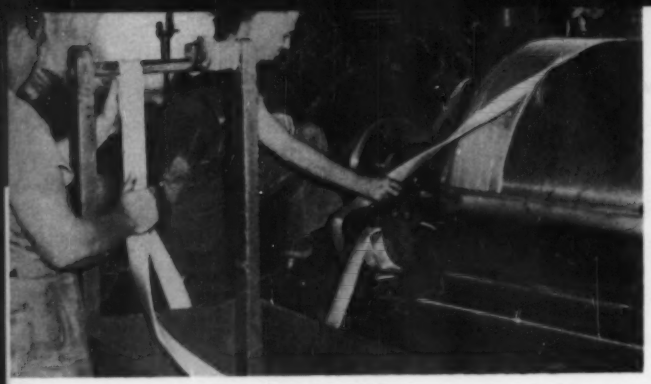
. . to assure a proper fit. Starting and finishing tapers are 1 in. wide (four rows of wire) for cylinders and ¾ in. wide (three rows of wire) for doffers. All teeth should be removed from the tail end for a distance of ⅜ in. to permit nailing. Selvage wire should be full and unbroken with an even circle of teeth at the extreme edges to assure an even web.

START THE FILLET . . .

. . . on the left-hand side of the card, and apply 50 lbs. of pressure per row of wire. Use a power drive with enough capacity to pull 2-in. cylinder fillets at a maximum pressure of 450 lbs. and 1½-in. doffer strips at 300 lbs. Power drive should have a positive-drive tension head with a pony brake. Step-cone pulleys and tension-box surfaces should be smooth and even.







WIND ON THE FILLET . . .

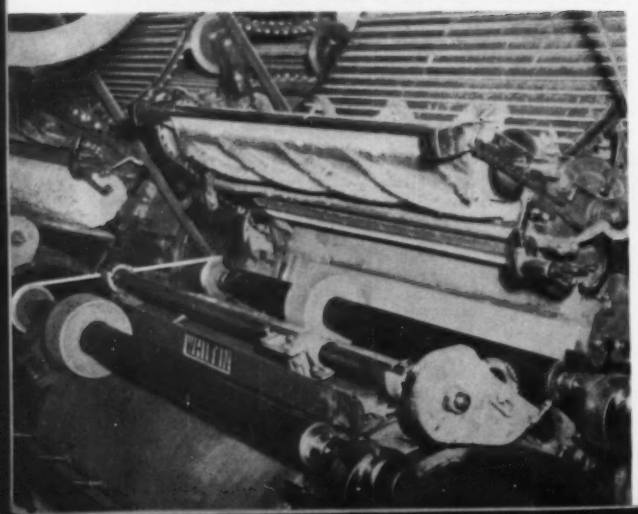
. . . under firm, even tension. The clothier's helper should constantly rub up the fillet to make sure that all wires are firmly seated in the foundation. Stove polish, in cake form, is applied to the back of the fillet before or after it is rubbed up. The rubbing-up operation is double-checked by constant feeling of the crown side of the fillet as it goes onto the cylinder or doffer.

PACK UP THE FILLET . . .

. . . with care as the clothing is wound on. Push each wrap or layer against the preceding layer firmly enough to avoid leaving space between the wraps—but not hard enough to "cup" the fillet. If bare iron shows between the wraps, even though the tension is correct, the fillet will become loose and interfere with settings. Most mills use a special packing-up tool for this operation.

FASTEN DOWN THE FILLET . . .

. . . after the cylinder has been clothed by putting a few tacks around the edge. Use the chalk marks as a guide to get the tacks in the right place. Let the fillet stand for a time, possibly 24 hrs., to permit the clothing to adjust itself to the surface. Then nail around the outside of the cylinder and across. The doffer can be clothed in the same manner.



GRIND THE CYLINDER . . .

. . . as well as the doffer and flats after the parts are backed off. Be sure that the grinder cradles are parallel, level, and aligned and that the frame bolts are tight. See that the bearings fit the stands properly and that the grinder and the grinder screw are oiled. Check lubrication at these points during grinding.

[For further details on how to grind and set cards, see TEXTILE WORLD, Jan. '55, p. 76, June '55, p. 144, Nov. '55, p. 114, and Jan. '58, p. 76.]

To Eliminate Fabric Defects—

Fabric defects such as thick and thin places, cracks at start-ups, set marks, and wavy cloth in many rayon and acetate fabrics can be minimized and often eliminated if the intermittent take-up motion of the loom is operating correctly. And in addition, you get a smooth-faced fabric of the highest quality.

Basically the take-up motions on both XD looms and S-6 looms that weave these fabrics are the same since they're both the silk type.

Over-all basic maintenance of the take-up begins with your superintendent of weaving and extends downward through your loomfixers. The overseer or foreman should check each take-up at each warp-out.

Take-Up Motion Must Be Clean

It's also very important to keep the take-up clean. Excess oil about the handwheel and pawl-lifter handle dirties a weaver's hands, and of course the fabric is soiled when the weaver draws in a warp end or touches the fabric.

Consequently a cleaning schedule at each warp-out must be set up. At this time, the cleaner should also remove: (1) all loose yarn wound around gears and parts and (2) oily lint from gear teeth.

The overseer's warp-out check is a visual check only. A mechanical-breakdown check should be made once a year.

For the warp-out check, he should:

1. Inspect the take-up-drum covering. It should be tightly glued to the drum and be free of oil, blistered places, cuts, cracks, and rough places.

2. Inspect the pressure roll. It must be clean and very fluffy; a densely packed roll must be replaced. Check the journals and hangers for wear; replace worn ones. Be sure the tension screw isn't too tight; if the bottom edge is run down past the top edge of the hanger, it's too tight.

3. Check the guide roll. Replace the roll if the journals or slide bushings are worn. Be sure the center support isn't binding.

4. Check the tension on the lower cloth roll by turning the handwheel. If it doesn't turn freely, the take-up motion is probably binding.

5. Check the pawl-lifter handle, hold pawl, and pawl end for binding.

6. Be sure the two pawl blades are not worn more than one-fourth the tooth surface.

7. Lift the pawl-lifter handle so that both pawl blades clear the Cheney ratchet. Grasp the ratchet handwheel with both hands and rock it forward and backward to check the ratchet shaft and ratchet stand for wear. Replace a worn shaft or stand.

8. Check these gears for wear: (a) take-up gear, (b) ratchet-shaft pinion, (c) intermediate-gear pinion, and (d) intermediate gear. If gears are worn more than one-fourth the tooth surface, replace them.

9. Turn the ratchet handwheel forward and backward. The handwheel should turn freely without any binding. Each time the ratchet is moved one tooth forward or backward, the take-up drum should move.

But the drum will not move for each tooth if the intermediate-gear shaft or support is worn or binding. This shaft is the pivot point of the entire take-up motion. It must be wholly free from wear and must be adjusted critically.

10. Check the drive-rod bushings at the upper part and lower part for wear, and replace worn ones.

11. Check the head-end rocker iron to be sure it is locked securely to the rocker shaft.

12. After all mechanical faults are corrected, check the ratchet to be sure it is set correctly. To make this check, be sure to turn off the loom-motor switch. Pull the shipper handle on so that the top hold pawl is engaged with the ratchet teeth. Move the loom lay forward and backward from back center to front center and adjust the turnbuckle and drive rods until each forward movement of the lay pulls down one tooth of the ratchet.

Small Settings Control Operation

Each respective pawl must be in the center of its tooth at the front- and back-center positions.

Adjust the spring on the top hold-pawl blade so that it engages the full depth of a ratchet tooth with the shipper handle on. With the shipper handle off, the pawl blade should clear the tooth approximately 1/32 in.

On cloth constructions that normally require the weaver to take up one or two picks on the ratchet handwheel at loom stops to prevent thick places, the spring can be turned to the side so that the pawl blade does not clear the tooth. In this way, the loom itself takes up the extra pick when the weaver pulls the lay back to restart the loom.

With the lay at front center and the shipper lever on, the pawl-lifter handle should clear the pawl end 1/32 to 1/8 in. If all adjustments are correct, the pawl-end blades will also clear the ratchet 1/32 to 1/8 in. when the pawl-lifter handle is raised to its vertical position. Then restart the motor.

At least once a year you should remove the entire gear train from the loom, clean all parts, discard worn parts, and reassemble and set up the motion. At this time, you can also check the take-up drum bearings for binding and lost motion.

Textured-Yarn Production Is Increased at Belmont

• Belmont Throwing Corp., Belmont, N. C., one of the South's pioneer producers of stretch and textured yarns, continues to grow. Recent improvements have added 40% to the company's productive capacity. Over-all production has gone up 300% during the last three years. Here's what Belmont is doing—

STROBOSCOPIC LIGHT is used to check spindle speed and entrance-wheel threading on new machines producing Fluflon. Heating unit (arrow) is set at 480° F.

BELMONT THROWING CORP., Belmont, N. C., recently announced that it has nearly completed a $400,000 modernization program and has added two new sales districts.

Belmont, specializing in the production of stretch and textured yarns, has tripled production during the last three years. Pounds produced per manhour have gone up 50%, and rejects have dropped to less than 1%. Just recently, the company announced a 7% wage increase.

"Aside from increasing our productive capacity 40%," said Henry A. Lineberger, secretary and treasurer of the firm, "the latest $300,000 worth of new machinery and $100,000 worth of air conditioning have improved quality standards, evenness, dyeability, and uniformity of finished garments. Working conditions are greatly improved, and we have not had a lost-time accident during 9 of the last 10 years."

Belmont's main business is commission throwing and the manufacture of stretch and lofted yarns under the Fluflon and Saaba patents. Some yarn is processed for use in women's hosiery and woven fabrics. Total production is about 50,000 lbs. per week when the mill is running full time.

Stretch-Yarn Machines Are Added

Thirty-three new stretch-yarn machines with a total of 6,540 spindles were recently installed for the production of Fluflon, and these spindles are humming seven days a week. End products are hosiery, underwear, leotards, dress fabrics, and automotive upholstery.

Before this equipment was installed, stretch yarn was made by redrawing the yarn onto a twister bobbin, twisting the yarn on a twister, twist-setting with high-pressure steam, redrawing to another twister bobbin, and back twisting. All of these operations are now performed on a single machine.

The false-twist principle is the basis of producing Fluflon on the new machines. From 70- to 100-den. nylon is pulled under proper tension from the manufacturer's package through a heating zone produced by a 10-v. thermal unit set at about 480° F. One-direction twist is put in the yarn while it is in this heating zone.

After leaving the termal unit, the yarn passes through a centering eye. Next, it is carefully threaded around the entrance wheel of a false-twist spindle that untwists the yarn.

The bobbin is then removed from the stretch-yarn machine and run through a downtwister that puts 1½ tpi. in the yarn. The final step is to cone the yarn into 1½-lb. packages; during this operation a lubricant is added.

Speed Is Nearly Doubled

These machines were designed to run at a spindle speed of 21,600 rpm.; Belmont runs them over 40,000 rpm. This speed is maintained by paying constant attention to the "Three Ts" —tension, twist, and temperature.

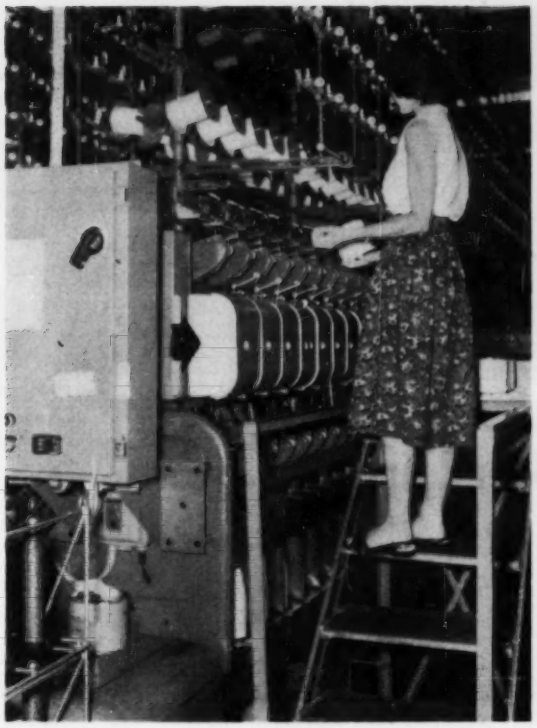
A special operator continuously inspects and adjusts the tensions; he gets around to each tension about once a week. Yarn is frequently checked at the entrance wheel with a special light and magnifying glass to make sure the ballon and thread alignment are correct. The entrance wheel is inspected with a stroboscopic light to assure correct spindle speed.

Temperature is electrically controlled, but each thermal unit is calibrated at regular intervals with a potentiometer. Thermal units are given a general cleaning every four weeks to make sure they are not clogged up by the yarn finish.

Despite the heat thrown out by the thermal units, room temperature is maintained at 80° F., thanks to a new air-conditioning system. Relative humidity is 60%.

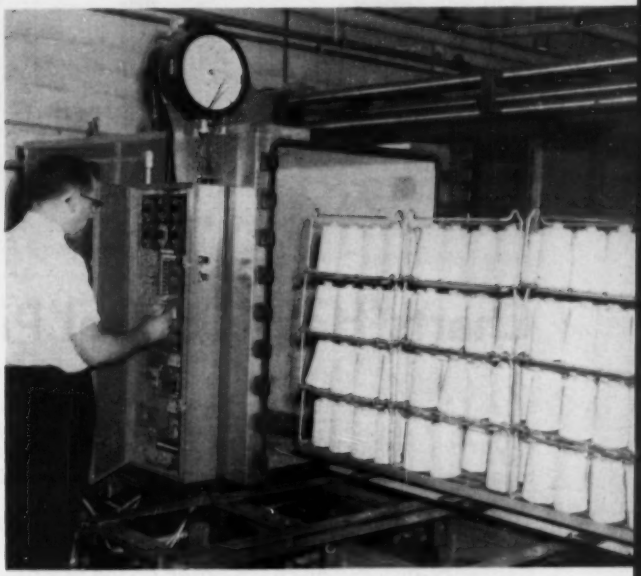
Lofted Saaba yarns are made on new machines from Fluflon that is downtwisted through a heating zone at 415° F. Extra bulk is given the stretch yarn by introducing it to the heating zone through a special set of feed rolls that can be adjusted to overfeed to the degree desired. Other effects can be obtained by underfeeding.

The Saaba yarns go into swimwear, girdles, underwear, hosiery, warp-knitted fabrics, flat-woven and pile fabrics, industrial fabrics, webbing, and braids.



CREELING the new machines that produce Saaba yarn is done with the aid of a ladder. Heating unit (arrow) is set at 415° F.

KNITTING YARN is preshrunk in this steam-vacuum machine that operates with completely automatic controls.



Weaving Yarns Are Plied

Plied weaving yarns for furniture, auto upholstery, and dress fabrics are downtwisted from 2.1-lb. pirns and put up in package sizes specified by the customer. Yardage counters are used to put exact amounts on the bobbin.

Mill-built magazine creels are used to supply several ends for plying. Downtime is minimized by tying the tail of the running pirn to the head of the reserve pirn above. When a pirn runs out, the next one in line starts feeding automatically.

Twisting speed varies with the denier. A typical operation calls for 260-den. nylon plied three times to be twisted at 6,100 rpm. spindle speed. In this instance, 3 tpi. are put in the yarn.

How Knitting Yarn Is Thrown

Nylon is prepared for knitting into the welt of women's seamless stockings by first transferring it from the 2.1-lb. manufacturer's pirn to 1-lb. twister bobbins. These bobbins are then placed on an uptwister where spindle speed for 40-den. nylon, a typical number, is 13,000 rpm. Twelve turns per inch are put in the yarn at this point.

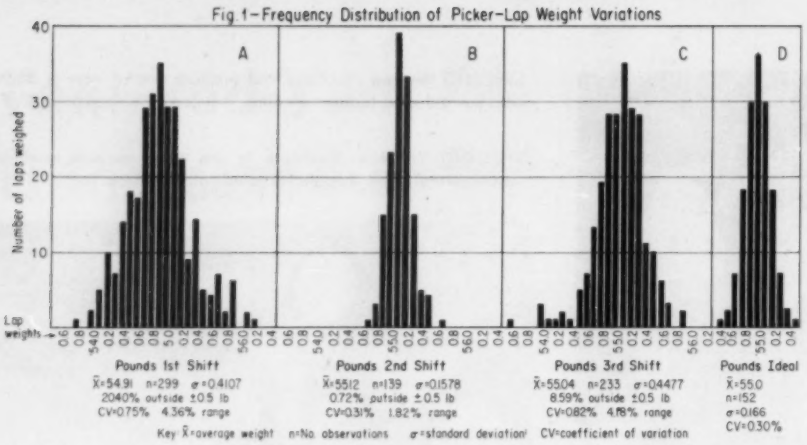
Yarn is treated with a sizing solution and put in size tubes, after which it is preshrunk in an automatic Turbo presetting machine. The full shrinking cycle of this machine is 30 mins. For 40-den. nylon, shrinking temperature is 260° F. and steam pressure is 23 lbs. Alternate vacuum and steam treatments are used. As a safety measure, steam is exhausted for 30 secs. before the door opens after the cycle is completed.

After the yarn is preshrunk, it is treated with a lubricant and antistatic agent and wound into cones.

In the shipping department, all yarn packages are identified with a label that indicates the spindle on which the cone was made, the operator, and the inspector. The cones are usually put in polyethylene bags for shipment by a specially designed packaging machine.

The 188-ton air-conditioning unit produces 87,000 cu. ft. of chilled air per minute. Pipes are being painted according to the standard color code. New fluorescent lighting has also been installed.

AIR-CONDITIONING DUCTS supply 87,000 cu. ft. of chilled air per minute. New strip lighting has improved working conditions.



FREQUENCY - DISTRIBUTION CHARTS show (1) spread is too great in A, (2) excellent control over lap weights in B, and fair distribution in C. An ideal bell-shape diagram is shown in D.

Charts Help Control Picker-Lap Variation

• Uneven picker-lap weights can be reduced to a minimum by applying a simple method of statistical control. No complicated mathematics are required. All you do is make a series of frequency-distribution charts based on the actual lap weights and study the shape of the curve. Here's how to do it—

By ERNEST R. BECKNER

CONTRARY TO POPULAR OPINION, the statistical analysis of figures does not always involve complicated formulas nor does it require mountains of mathematical calculations. In practice, the simplest approach is the best if it will yield the desired results.

The Shewhart control chart, for example, is the basis of a simple significance test and is widely used. We keep these charts on everything from picker laps to finished-cloth weights, and the charts enable us to spot many manufacturing troubles before they get out of hand.

Another useful tool for analysis of figures is frequency-distribution charts. The bar charts (Fig. 1) illustrate an actual mill example.

Here, each lap was weighed as it came off the pickers and the weight was printed on a tape by the scales. Just looking at the tapes didn't prove much, but the frequency-distribution bar charts tell an interesting story.

In Fig. 1-A, for example, there are 299 laps averaging 54.91 lbs. gross. Standard weight is 55 lbs. There is no complaint here because acceptable laps may weigh from 54.5 to 55.5 lbs. But the spread of the distribution is too great; more than 20% of the laps are beyond either limit. Doublings in subsequent processes will average out much of the variation within each lap but not the variation from lap to lap.

Laying laps at cards, doffing, and creeling drawing and roving frames are done in cycles. The range of lap weights shown here is computed at 4.37% or

$$\frac{56.2 - 53.8}{54.91} = 4.37\%$$

The standard deviation (0.4107) and CV (0.75%) are computed but not reported because at the time of this test our personnel was more familiar with percentage range.

In this example, either the operator disregarded his instructions and sent light and heavy laps into production or he neglected to mark certain laps as rejects. It is suspected that the former happened. Unevenness increased on control charts for all subsequent processes. This situation, according to the chart, appears to be a supervisory problem.

The picker tender was later observed to be over-correcting by making excessive adjustments at the picker for weight. This practice was first suspected after we plotted consecutive lap weights on a trend chart. The operator was transferred to another shift, and the wide distribution appeared on that shift too.

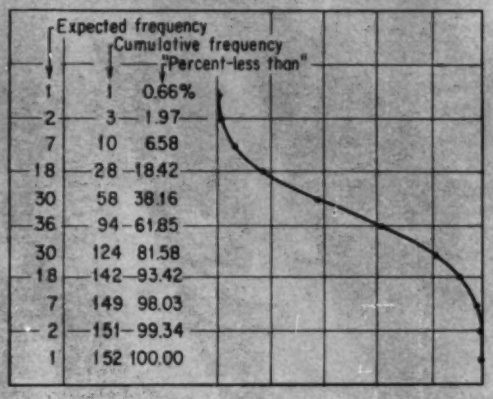
Weight Control Is Excellent

The second frequency distribution (Fig. 1-B) of 139 laps shows almost unbelievably good control over the weight. The production report for this shift was checked against tapes from the lap scales and found to be correct. These laps average about 0.25% heavy; a range of 1.82% is good. Standard deviation is 0.1578, and CV is 0.31%. Without those laps outside of limits, the range would have been less than 1.5%.

The third frequency distribution (Fig. 1-C) is centered very well at 55.04 lbs. average. The bulk of these laps is within tolerance, but there are 20 that should have been rejected. This distribution is better than the one in Fig. 1-A, although 8.59% are outside limits. The range is 4.18%, standard deviation 0.4477, and CV 0.82%.

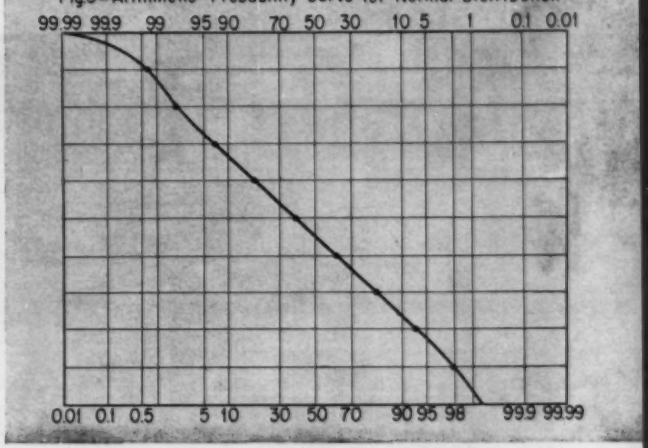
The preceding frequency distributions were easy to make; we merely copied down a numerical sequence of lap weights from 53.8 to 56.2 lbs.

Fig.2– "Percent-Less-Than" Cell Boundary Values



OGEE CURVE based on "percent-less-than" cell boundary values is somewhat more accurate than the bar-chart method. Smooth curve indicates normal distribution.

Fig.3– Arithmetic-Probability Curve for Normal Distribution



"PERCENT-LESS-THAN" CELL BOUNDARIES plotted on arithmetic-probability paper give an approximately straight-line curve. The curve is based on figures used in Fig. 2.

Here's a distribution that is a little more complex:

Assume that there is available a list of 60 sizings of roving. The sizings run from 1.252 to 1.393 hk. roving, a spread of 0.141. A cell width or interval of 0.008 will give 20 cells, which is about right for 60 sizings.

Generally, frequency distributions are more reliable and tell more if there are 100 to 500 individuals grouped into 20 cells. There must be a lower cell limit (LCL), a cell mid-point (CMP), and an upper cell limit (UCL). All cells must be of equal width or value, with no gaps in between. They must be arranged so that no individual will fall between cells. An example is shown in the table.

There is a concentration in CMP of about 1.310, with a gradual decline on either side. Possibly this distribution would show up a little better if there were 10 cells instead of 20.

Bell-Shape Charts Are Ideal

What shape should the frequency distribution have? The answer is a normal or Gaussian distribution. The diagram should be bell-shaped and symmetrical. An example of normal distribution, illustrated in Fig. 1-D, is centered at 55 lbs. There is a spread of 0.5 lb. on each side of the average, and the distribution contains 152 laps. Actually, with ideal opening-room conditions, good pickers, and skilled operators, the distribution of picker laps should be even more peaked.

Other Approaches to the Problem

Normal distribution has been studied thoroughly, and much is known about it. The simplest way to test for a normal curve or normal distribution is to plot a frequency distribution, polygon, or bar chart.

The next simplest but more accurate way to study normality is to set up a control chart that will detect trends and reveal information that the frequency distribution obscures. Make a table of "percent-less-than" cell boundaries and plot it on regular graph paper as shown in Fig. 2. The result is an ogee curve. Then plot the same "percent-less-than" values on arithmetic-probability paper. The result should be very nearly a straight line as in Fig. 3.

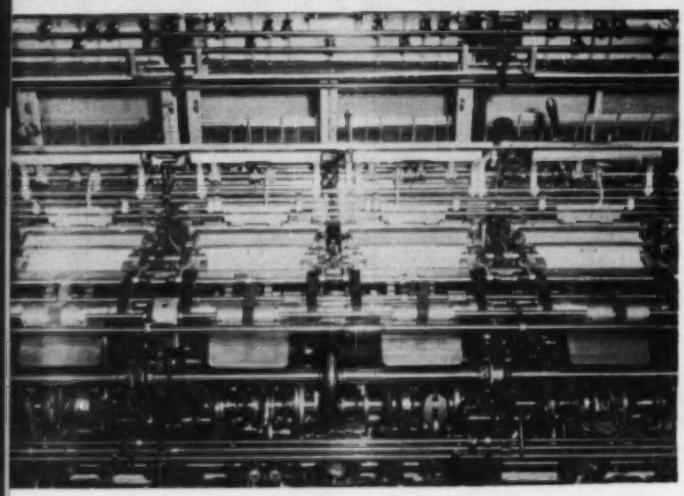
Still another way to test for normality is to make a frequency distribution along with cell intervals. The average and standard deviation is computed. From these figures, the expected frequency can be calculated. Then the chi-square value is computed and compared with the chi-square distribution to obtain a numerical value that is a measure of conformance to the normal distribution.

There are other and more complicated ways to test for normality, such as to compute skewness and kurtosis; but these tests are used mostly in theoretical work and seldom apply to mill practice.

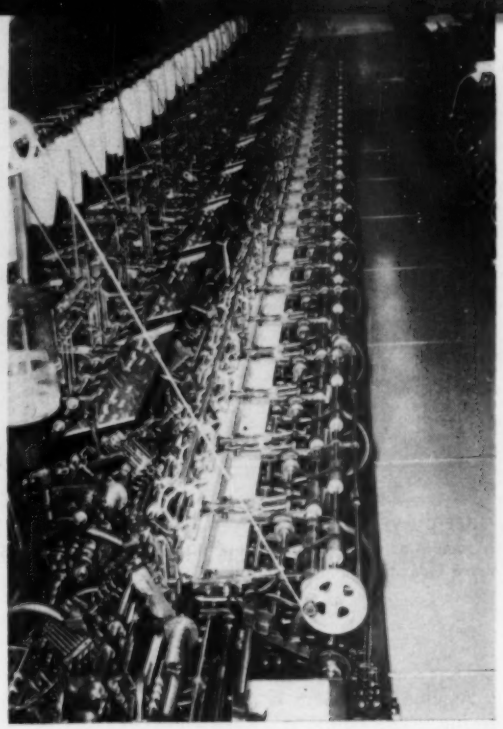
Typical 20-Cell Sizing Pattern for Roving

LCL	CMP	UCL	Frequency
1.242	1.246	1.250	1
1.251	1.254	1.258	111
1.259	1.262	1.266	11
1.267	1.270	1.274	11111
1.275	1.278	1.282	111
1.283	1.286	1.290	11
1.291	1.294	1.298	11111
1.299	1.302	1.306	111111
1.306	1.310	1.314	11111111
1.315	1.318	1.322	11111
1.323	1.326	1.330	111
1.311	1.334	1.338	1111
1.339	1.342	1.346	111
1.347	1.350	1.354	1
1.355	1.358	1.362	1
1.363	1.366	1.370	1
1.371	1.374	1.378	11
1.379	1.382	1.386	1
1.387	1.390	1.394	111
1.391	1.398	1.402	1

FREQUENCY DISTRIBUTIONS have a lower-cell limit (LCL), a cell mid-point (CMP), and an upper-cell limit. Concentration of CMP at 1.310 represents peak of frequency distribution.



CLEANING EFFECTIVENESS is shown by this 60-gauge machine that's been in operation since 1950.



PIRN HOLDERS are mounted on the gallows of the machine so that yarn can balloon freely to make these perfect welts.

Seven-Point Program Controls Hosiery Length

• Here's how one mill controls the length of full-fashioned hosiery within ± ½ in.

By **LAURENCE KOCH,** Knitting-Room Foreman, Comal Hosiery Mills, Inc.

A HIGH OVER-ALL PERCENTAGE of first-quality full-fashioned hosiery is being produced at Comal Hosiery Mills, New Braunfels, Tex., with a strict length-control system in knitting and finishing departments.

This seven-point system controls finished hosiery with a tolerance of ±½ in.:

1. Rigid Cleaning Schedule

A clean machine is compulsory in manufacturing first-quality hosiery. A clean machine gives the knitter more pride in his work and is absolutely necessary in maintaining even length control.

Here's our rigid cleaning schedule:

Weekly cleaning consists of thoroughly cleaning these parts with clean soft absorbent rags: yarn-box tops, tension rods, drip aprons, pointex racks, sinker heads, front table, all shafts, and front and back rails.

Catch bars, slide, and slur cams are thoroughly wiped clean and are then coated with needle oil.

Carrier rods, automatic push rods, and narrowing machine are wiped clean and are washed with needle oil.

A brush and heated nylon-cleaning solution are used to wash tension rings, wire ring holders, snappers, and carriers. Then they are coated with needle oil.

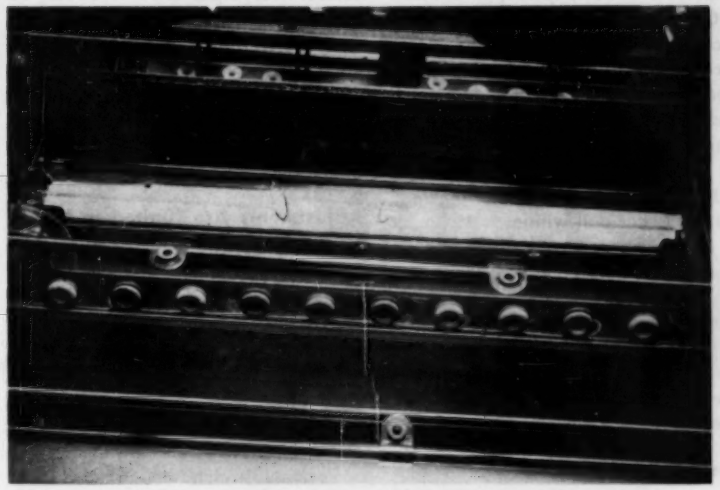
Hot Solution Cleans Well

Welt bars are also washed with the nylon-cleaning solution; then they're blown off with compressed air and coated with needle oil.

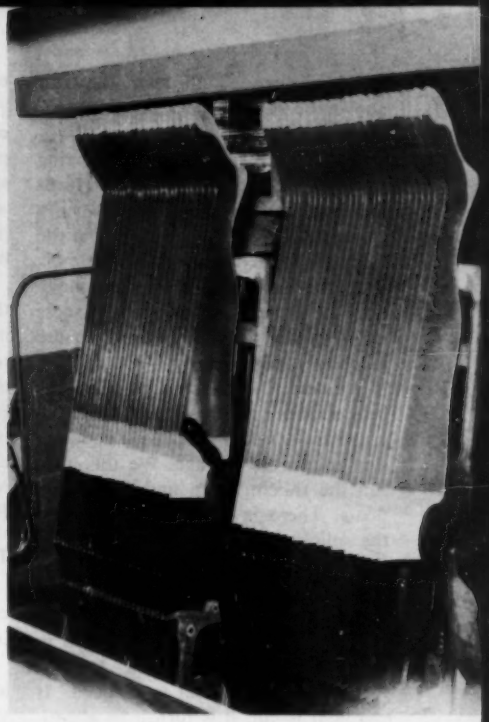
Moistening troughs are drained and refilled with fresh solution once a month. Glass siphons and solution bottles are also removed and cleaned.

Our three-month cleaning schedule is still more rigid:

Moistening troughs are removed,



TURN RINGS on the glass floats eliminate cut floats because the yarn turns the rings continuously.



EVEN LENGTH at preboarding is the result of properly instructing new operators and close supervision of regular operators.

thoroughly cleaned, and steamed.

All tension rods are cleaned thoroughly. Old pads, worn turn rings, and cut or otherwise damaged glass floats are replaced with new ones; if they aren't damaged, they are thoroughly cleaned and steamed.

Snappers are cleaned with a hot nylon-cleaning solution.

Damaged eyelets and ceramic yarn guides are replaced. All our yarn guides are ceramic because they give a light uniform tension and create little static electricity on nylon yarns.

Once a year, all machines are cleaned from top to bottom with heated nylon-cleaning solution and are oiled before they're put back into operation.

2. Uniformity at Thread-Up

Uniform thread-up is a very important factor in maintaining accurate length control. It can be maintained easily by an alert supervisor and willing knitters.

All tension rods must be set alike. All yarn guides must be set at the same angle and in as near a straight line as possible from the pirn down to the yarn carrier to insure even tension throughout the machine.

The first eyelet under the pirn must be centered perfectly with the bottom of the pirn and should be 6 to 8 ins. from the bottom. If these settings aren't maintained, uneven over-all hosiery length, uneven selvages, and consequently misfitting hosiery will result.

3. Large-Package Unsized Nylon

Changing to unsized nylon yarn has been a great help to us in maintaining even length control. It has eliminated size deposits on eyelets, yarn guides, sinker heads, needle bars, etc. These deposits formerly added tension to the yarn, which could not be controlled.

We mounted pirn holders on the gallows of the knitting machines, and now the yarn balloons more freely than from yarn cases on the machine. Consequently there's less tension on the yarn as it's being pulled from the pirn, and stitch length in hosiery is more uniform.

Another good feature of yarn suspended from gallows is that the knitter can more easily keep a constant check on the yarn and can keep his splicing pirns more evenly matched. Splicing yarns should always be evenly matched in size to insure even length on both sides of the hosiery foot.

We now use 1½-lb. compound-wound packages on pirns instead of ¾-lb. packages. This change to larger packages has greatly reduced the number of short hosiery knitted from the start and end of a package.

4. Water-Trough Solution

Running yarn through the water-trough solution and using turn rings on glass floats has been another great help in maintaining accurate length control. It has eliminated oil wicks, which presented the problem of excess yarn tension. And besides, oil wicks are always messy and are more costly than troughs.

In preparing the solution, we use ½ pt. of Nytex No. 10 to 50 gals. of distilled water. Then we mix the solution thoroughly with an agitator. We maintain the solution at 7 to 8.5 pH. This range protects steel, brass, and bronze machine parts best.

Distilled water is much better than untreated water. Untreated water is the chief cause of a hard, glassy, saw-toothed, silica-like deposit that forms on needles, sinkers, and dividers. These saw-toothed edges cut and distort stitches in the gray fabric.

Turn rings on the glass floats eliminate cuts in the floats when yarn passes under them.

The turn ring is slipped over the round end of the glass float, and the

yarn is threaded through the ring above the float instead of under the float.

As the yarn feeds through the ring toward the knitted fabric, it turns the ring continuously. This constantly changing surface prevents wear to the ring.

As the ring turns, it transfers moisture to the top of the yarn. Excess moisture that may be harmful to the machine is removed by a felt pad.

We don't use rings on splicing ends because more tension is needed on the untwisted yarn to produce a good inside reinforced selvage. We therefore run the splicing yarn under the glass floats. There is not much danger of the splicing end cutting into the glass floats because it travels a shorter distance at slower speed than welt and main yarn.

But when unevenness is detected in the selvage lengths of the foot of hosiery, the glass float is checked. If the float is cut, it is turned to a position that's not damaged or it is replaced.

5. Constant Air Condition

Air conditioning must be maintained constantly at 80° F. and 50% r.h. This even condition eliminates expansion and contraction of metals in knitting machines that directly affect length control. Even air control also affects nylon yarn because any change in temperature or humidity changes the texture of the yarn, which in turn changes hosiery length.

6. Presetting Before Seaming

After stockings are knitted at our mill, they are transferred on a specially made truck to the presetting cabinet. Presetting the stockings sets the stitch and makes them snagproof so that they can be handled more easily in seaming and preboarding.

The seamer can produce a better seam. The preboarder can pull the hosiery down to the desired length more easily, which is an important factor in length control.

7. Weekly Pulling Tests

Weekly pulling-test sets and maintaining close cooperation between preboarding and knitting departments is the most critical area of hosiery-length control. It is almost impossible for two operators to exert the same amount of pull in preboarding.

Proper instruction of new employees and close supervision of older employees is the key to pull control.

Once a week, we run test sets from each knitting machine; these sets are preset, seamed, and preboarded. The stockings are then pulled on a form and are checked for correct heel length and over-all length, as shown by the accompanying chart.

If there's any section of a machine that does not pull within ± ½ in., it is checked for correct threading-up, tension, etc. before any adjustments to the machine are made by the fixer. After adjustments are made, hosiery is again taken from this section and checked for stitch count on a Marvel Meter and a stretch test is made on a Premier selvage-length tester.

Tests Give Up Results

These tests show if the length is now correct and if a straight selvage is being knitted.

If adjustments are made that could affect the length of hosiery on the entire machine, another test is run for correct heel length and over-all length.

Other weekly test sets taken directly from the knitting machine are checked on the two instruments for (1) stitch count and (2) stretch. These results are also posted on the chart and are compared with the test sets that are pulled on the forms.

Adjustments Are Limited to Needs

This three-way comparison eliminates the probability of human error and shows the fixer how each section is actually knitting. For example, if hosiery from the same section of a machine checks out either long or short in all three tests, the fixer definitely knows that some sort of machine adjustment must be made.

Periodic stretch tests of the welt, ankle, and instep are also made. Final tests on finished hosiery are made by the forelady in the finishing department, and any irregularity in length is reported immediately to the superintendent of the knitting department.

Machine No. 6
Style 51-15 N.H.
Size of Pirns Large
Name of Preboarder R.F

TEST REPORT

Date: 7-17-59

Size: 10 1/2
Standard 33 1/2 ins.
Tolerance ± 1/2 in.
Rocker Setting 0.060 in.

	Board Test Standard: Heel 6 ins. Over-all 33 1/2 ins.		Selvage Test Standard: Heel 11 1/2 ins. Over-all 33 1/2 ins.		Marvel Meter	Fixers Remarks
Section	Length		Length		Standard	
No.	Heel	Over-all	Heel	Over-all	80-82	
1.	6	33 5/8	11 1/2	33 1/2	80	
2.	6	33 1/2	11 1/2	33 1/2	81	
3.	6	33 1/2	11 1/2	33 1/2	81	
4.	6	33 1/2	11 1/2	33 1/2	81	
5.	6	33 1/2	11 1/2	33 1/2	81	
6.	6	33 1/2	11 1/2	33 5/8	81	
7.	6	33 1/2	11 3/8	33 1/4	82	
8.	6	33 1/2	11 1/2	33 1/2	81	
9.	6	33 1/2	11 1/2	33 5/8	80	
10.	6	33 1/2	11 1/2	33 1/2	81	
11.	6	33 1/2	11 1/2	33 1/2	81	
12.	6	33 1/4	11 3/8	33 1/4	82	
13.	6	33 3/4	11 1/2	33 1/2	80	
14.	6	33 1/2	11 1/2	33 5/8	81	
15.	6	33 1/4	11 3/8	33 1/2	82	
16.	6	33 1/2	11 1/2	33 1/2	81	
17.	6	33 1/2	11 1/2	33 1/4	81	
18.	6	33 1/4	11 3/8	33 3/4	82	
19.	6	33 1/4	11 3/8	33 3/8	82	
20.	6	33 1/4	11 1/2	33 1/2	81	
21.	6	33 1/2	11 1/2	33 1/2	81	
22.	6 1/8	33 3/4	11 3/4	33 3/4	79	Set Slur-cam Clearance (0.002 in.)
23.	6 1/8	33 3/4	11 5/8	33 7/8	79	Set Slur-cam Clearance (0.002 in.)
24.	6	33 1/2	11 1/2	33 1/2	81	
25.	6	33 5/8	11 1/2	33 3/4	80	
26.	6	33 3/4	11 1/2	33 3/4	80	
27.	6	33 3/4	11 1/2	33 5/8	80	
28.	6	33 3/4	11 1/2	33 5/8	80	
29.	6	33 3/4	11 5/8	33 3/4	80	
30.	6	33 1/2	11 3/8	33 3/8	81	

WEEKLY TEST RESULTS are posted on this chart, which gives a three-way comparison to eliminate human errors.

MAN-MADE FIBERS AND YARNS

1959

REPRINTS OF THIS SECTION

are available at the following prices:
1 to 25 copies, $1 each; 26 to 50 copies,
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ENKA NYLON

...the nylon with new performance features!

Enka Nylon enables knitters and weavers to produce new fabrics with inherent characteristics that generally cannot be obtained with other available nylon yarns and fibers.

A synthetic polyamide fiber made from caprolactam, Enka nylon is a different product made from different raw materials. While it is new in the American market, it has been produced in substantial volume in Europe for many years.

The different molecular structure of the yarn produces a somewhat more absorbent fabric with greater affinity for dyes. Enka nylon accepts color rapidly and completely; its evenness of dyeing is the envy of the industry.

Enka nylon processes exceptionally well on standard equipment, and it is generally suitable for all applications in which Type 66 nylon is used. It has all of the proven advantages of regular nylon plus some extra performance characteristics of its own. Enka nylon's lower melting temperature generally permits the application of lower heat-setting temperatures.

Since the polymerization of Enka nylon occurs on a continuous basis, there is more uniformity in the polymer itself. This uniformity is not matched by nylon yarn produced on a batch basis. The higher elongation and lower elastic modulus of Enka nylon produce fabrics of greater elasticity and contribute to better fit and wearing comfort.

ENKA NYLON YARNS

Den/Fil	Twist	Luster	Type	Tenacity	Package
15 monofil	0.5Z	Semi-dull	9506	Normal	Pirn
15 monofil	0.5Z	Semi-dull	9506	Normal	Beam
15 monofil	0.5Z	Dull	9514	Normal	Pirn
15 monofil	0.5Z	Dull	9514	Normal	Beam
15/2	0.5Z	Semi-dull	9518	Normal	Pirn
18/2	0.5Z	Semi-dull	—	Normal	Pirn
20 monofil	0.5Z	Semi-dull	9524	Normal	Pirn
20/2	0.5Z	Semi-dull	9478	Normal	Pirn
30/4	0.5Z	Semi-dull	9532	Normal	Pirn
30/6	0.5Z	Semi-dull	9464	Normal	Pirn
40/8	0.5Z	Semi-dull	9448	Normal	Pirn
40/8	0.5Z	Semi-dull	9448	Normal	Beam
50/13	0.5Z	Semi-dull	9528	Normal	Pirn
70/32	0.5Z	Semi-dull	9622	Normal	Pirn
100/32	0.5Z	Semi-dull	9652	Normal	Pirn
200/16	0.6Z	Bright	9826	Normal	Cone
200/16	0.5Z	Bright	9826	Normal	Beam
200/34	0.6Z	Bright	9832	Normal	Cone
200/34	0.5Z	Bright	9832	Normal	Beam
260/16	0.6Z	Bright	9197	Normal	Cone
260/34	0.6Z	Bright	9197	Normal	Cone
520/32	0.6Z	Bright	9546	Normal	Cone

Top mills are now using Enka nylon for a multitude of end-products. They are taking advantage of the different, more desirable characteristics of Enka nylon to style a new world of apparel and home furnishing fabrics.

For details about Enka's "customer service" program get in touch with A. B. Harris, Jr., our Nylon Product Sales Manager. He will introduce you to Enka nylon and the merchandising bonus Enka's nylon customers enjoy. Phone Mr. Harris in New York at OXford 7-6141, Extension 26, or contact the Enka sales office nearest you.

SO MANY GOOD THINGS BEGIN WITH ENKA NYLON *Yarns*

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Surge of New-Fiber Activity Reflected In 1959 Man-Made-Fiber Table

The scope and versatility of man-made fibers have broadened greatly since the 1957 revision of TEXTILE WORLD's Man-Made-Fiber Table. The period was marked by—

- ***Introduction of six new fibers of major commercial importance***
- ***Announcement of many experimental and modified fibers***
- ***Stepped-up fiber research and development***
- ***Construction and expansion of production facilities***

By WILLIAM G. ASHMORE, Associate Editor, TEXTILE WORLD

Six new fibers of major importance have come into commercial production in the two years since publication of TEXTILE WORLD's 1957 Man-Made Fiber Table.

They are Zefran, Creslan, Kodel, polypropylene, Corval, and Topel. Properties of the first four fibers are shown on the face of the 1959 table. Properties of Corval and Topel are described elsewhere on this side.

Some other changes appear on the table this year. Fibers are grouped under generic headings in accordance with the Federal Trade Commission's recent rules under the new Textile Fiber Products Identification Act. Definitions of generic names are given at the head of each fiber group. One new fiber property, q-water imbibition, has been added.

Other fibers and yarns with new or improved properties announced during the last two years include Fiber 500, Fiber 40, Fiber SM 27, Avicron, Ondulé, Civona, Type 272-F Super Cordura, Teron, Vycron, Darvan X-7, Type 64 Dacron, Type 25 Orlon, Types 420, 520, and 707 nylon, Orlon Cantrece, Rovana, and Fiber K.

Here are some facts about the more-important new fibers:

Zefran (acrylic)

Zefran acrylic fiber came into commercial production in July, 1958. First apparel items to reach consumers in the fall of 1958 included women's coats, dresses, full-fashioned sweaters, and children's wear. Men's suitings and slacks have since appeared.

Fabrics introduced since last fall consist of blends of Zefran with wool or specialty fibers such as angora rabbit hair. Also, 100% Zefran full-fashioned knitted sweaters are available.

Present sales programs include blends of Zefran with cotton, rayon, and other man-made fibers. Developments in progress include a variety of knitted and woven applications in the apparel field.

Creslan (acrylic)

American Cyanamid Co. began production of Creslan early in 1959 at a modern plant near Pensacola, Fla. The plant has a production capacity of 27-million lbs. of staple and tow annually.

Initial marketing of Creslan in woven goods began in the spring of 1959 on a limited scale; expanded programs are planned for both woven and knitted goods.

Anticipated uses include men's and women's suitings and coatings, shirt and dress fabrics, children's apparel, knitted underwear and outerwear, fur-like fabrics, piece goods, blankets, carpets and rugs, and home furnishings.

Creslan used in initial marketing programs was produced in a pilot plant at Stamford, Conn. An additional pilot and small-production plant is now under construction at the newly completed main plant in Florida.

Advantages claimed for Creslan include good dyeing properties, ease of processing on conventional systems, dimensional stability, wrinkle resistance, resilience, and ease of care.

Kodel (polyester)

Kodel, of the same polyester family as Dacron and Terylene, was announced last fall and put into limited commercial production early this year by Eastman Chemical Products Co.

It was announced in June that construction had been started on a multimillion-dollar addition to the present production facilities at Kingsport, Tenn. When the new unit is completed, annual production capacity will be in excess of 20-million lbs. The new plant is expected to deliver initial shipments by the middle of 1960.

Kodel was originally announced for use in clothing with a stay-fresh appearance and wash-and-wear characteristics. Men's clothing made with this fiber was introduced in nearly 100 stores in 22 cities last spring, backed by a massive advertising program. Kodel will appear this fall in a broader range of men's, women's, and children's apparel.

Polypropylene (olefin)

Several fiber producers are now manufacturing polypropylene fiber on a commercial basis. This fiber is a member of the olefin family, but some of the properties are different from polyethylene. Chief differences are in the melting point, elastic recovery, permanent set, and hand.

Polypropylene fiber can be spun, crimped, and textured for use in knitted, woven, and nonwoven fabrics or in blends with natural or other man-made fibers. At present, the fiber is colored by pigmentation, but encouraging progress has been made in dyeing with an array of colors. Also, considerable progress has been reported in stabilizing polypropylene monofilaments against degradation under sunlight.

Commercial production of polypropylene fiber so far has been confined to gauges ranging down to about 40 den., suitable for industrial applications such as marine ropes and industrial fabrics. But research is under way that is expected to broaden the potential market.

The fiber is made by melt extrusion at present, but it is possible that solution spinning also may be used in the future.

Corval and Topel

Corval and Topel, cross-linked cellulosic fibers, are classified at present as rayon by the Federal Trade Commission in the new Textile Fiber Products Identification Act. This classification is strongly opposed by the manufacturer, Courtaulds (Ala.) Inc., which is seeking to have the designation changed to "lincron."

Corval and Topel are produced from cellulose combined with other compounds in such a way that the cellulose chains are bridged across or "cross-linked." This molecular structure is said to make the fibers chemically and physically different from other cellulosic fibers.

Water absorbency and swelling properties are comparable to those of cotton, and fabric made from the fibers is claimed to have "reasonably good inherent dimensional stability to laundering."

Corval has a soft, bulky, wool-like hand and is suitable for blending with wool and man-made fibers such as the acrylics. Blended with Orlon, Corval gives resistance to fuzzing and pilling, good dye absorption, and ability to pleat permanently.

Topel can be blended with cotton, acetate, and nylon to produce fabrics with a soft hand and good appearance. Level, even shades are produced with dyes commonly used on cotton and rayon.

High-Wet-Modulus Cellulosics

One of the most important developments in cellulosic fibers in the last two years was the recent introduction of three new fibers with high-wet-modulus properties that make compressive shrinkage possible. The fibers, announced early this year, are now being tested and evaluated in mills. They are American Enka's Fiber 500, American Viscose's Fiber 40, and Courtauld's SM 27. These fibers are designed to compete directly with cotton.

The fibers are currently classified as rayon under the FTC rules, but the producers are trying to have a new generic name established.

Fiber 500 can be stabilized without the use of resins, and it gives dimensional stability to fabrics so that they can be machine washed without progressive shrinkage. Wash-and-wear fabrics made from the fiber have little loss in tensile and tear strength after resin applications. Fiber 500 is in limited commercial production.

Fiber 40 adapts itself easily to compressive shrinkage, and fabrics made from the fiber show dimensional stability equivalent to that of cotton fabrics. Tests show that residual shrinkage is less than 2% after repeated launderings. Fiber 40 is in limited commercial production.

Properties of Fiber SM 27 are not available at this writing, but it is understood that chemical and processing behavior is similar to that of the other two fibers in this category.

Rayon Seeks New Markets

Relatively few basic changes have been made in the properties of existing viscose, cuprammonium, and Fortisan rayon since publication of the last Man-Made-Fiber Table; but a number of new and improved types of yarn were introduced during the period.

A permanently crimped rayon filament yarn, Avicron, was brought out by American Viscose Co. for use in rugs, carpets, and bedspreads.

When Avicron is used in cut-pile construction, the yarn takes on a curled or caracul-like surface texture upon being wet with water. The crimp, complete and nonprogressive, cannot be removed by subsequent wetting. There is practically no loose lint produced during manufacturing operations, and the yarn can be used in regular rayon tufting processes.

Type 272-F Super Cordura rayon, introduced by Du Pont, is an industrial yarn that needs no adhesive dipping for adhesion to rubber belts and hoses.

In the field of fashion yarns, Du Pont now has in production Ondulé, a continuous-filament random-slubbed rayon yarn, and Civona, a hollow-filament rayon yarn.

Ondulé gives a slub effect without imparting a pattern and has a high luster similar to that of silk. End products include dresswear, suitings, sportswear, curtains, and draperies. Civona so far has found its largest use in women's hats but is being evaluated for curtains, dresswear, and other uses.

American Bemberg is bringing out a soft-spun Cupioni with a more open filament and softer hand. The yarn is expected to be combined with acetate for use in men's and women's wear.

Other yarns recently announced by American Bemberg include a number of solution-dyed nubby yarns and a yarn dyed with different colors at irregular intervals.

Industrial Rayon has introduced a continuous-process flat filament yarn called Strawn that has a firm, straw-like hand.

Other developments in the rayon field include a trend toward more blending with cotton and other fibers. Some producers are eyeing the multimillion-dollar print-cloth market as a big potential outlet for rayon-cotton blends.

Improvements in solution-dyed yarns and crimping processes are expected to open up more markets for rayon of all types. Special fibers are being developed for nonwovens, cigarette filters, sewing thread, tire cord, and many other end uses.

Five producers manufacturing high-tenacity super rayon tire cord have banded together to promote the yarn under the name Tyrex. Their efforts are aimed at a bigger slice of the tire-cord market.

Acetate Aims at Home Furnishings

While the properties of acetate fiber have not changed greatly during the last two years, a number of improved types of yarn and staple were developed for new end uses. Among these uses are drapery and upholstery fabrics, floor coverings, curtains, shower curtains, and specialties.

Eastman Chemical Co. brought out Heatherloft, a lofted yarn made from a smooth-surface solution-dyed yarn in a blend with white fibers to give a deep-pile, dimensional effect in carpets. Several other lofted yarns designed to provide special effects in furnishings were also introduced.

Celanese Corp. announced a number of specialty acetate staple fibers. Type F is produced for nonwovens and battings, where a fiber is needed that is quick drying, moth and mildew resistant, nonallergenic, odorless, dust and lint free, lofty, bulky, and resilient.

Type K has qualities that make it suitable for use in sleeping pillows and comforters. Type HC was developed primarily for use in carpets but is now being used in upholstery fabrics and in combination with other fibers for bathroom ensembles.

Type D has a high crimp and is made for napped fabrics where resiliency and loft are important.

Nylon Production Increases

Nylon producers expanded production capacity more than 100-million lbs. during the last two years, and new markets were opened up.

Much of this increase was in the tire-cord field. In 1958, a record year for replacement-tire sales, tires made with nylon cord accounted for approximately 40% of the market.

Golden Caprolan, a new nylon 6 tire-cord yarn, was introduced by Allied Chemical & Dye Corp. Golden in color, the yarn is said to be resistant to heat, flex fatigue, and water.

A number of special nylons were developed for use in other fields. One of the more important is Du Pont's 420 nylon staple, now in commercial production, designed specifically for reinforcing cotton fabrics such as denims, twills, and sateens used for utility and work clothing. This fiber, in 25% blends with cotton, is claimed to greatly increase wear life of the fabric.

Du Pont 520 nylon, available in limited quantities, was developed especially for carpet manufacturers to permit a broader range in styling 100% nylon carpeting. This continuous-filament yarn is intended to complement the four types of staple nylon already in wide use for carpets.

For industrial use, especially cordage, Du Pont 707 nylon was commercialized late in 1958. This yarn produces rope with a higher wet and dry strength than regular nylon rope.

American Enka brought out a new bright nylon 6 and improved the properties of dull and semidull nylon. Nylon production capacity is being doubled at Enka. Chemstrand has been doing a lot of research in the nylon tricot field. In June, this company broke ground for a new multimillion-dollar nylon plant near Greenwood, S. C. Industrial Rayon, specializing in the floor-covering field, announced a new 22-den. nylon for blending with wool.

Textured nylon is one of the more promising areas of future growth. These yarns are upgrading fabrics made from filament yarns and are replacing spun yarns in some uses. From 30- to 40-million lbs. of nylon was textured in 1958, and indications point to a level of 100-million lbs. in the next 5 to 10 years.

Acrylics and Modacrylics Step Up

Two new acrylic fibers, Zefran and Creslan, appear this year on the face of the Man-Made-Fiber Table, an indication of the expanding production in this field.

Du Pont introduced several new Orlon products and reintroduced Orlon filament. Orlon Cantrece, an acrylic filament, now in small-scale production, is being evaluated as a basic filament supply yarn for texturing sweaters.

The yarn is designed to give the feel and look of silk in knitwear. At present, it is available only in 20-den., 80-filament, semidull yarn. The new filament is said to be much more dyeable than previous filament Orlon.

Type 25 Orlon staple was put on the market late in 1958 for use on cotton-system spinning.

Two years ago, Acrilan was new in the carpet field. Today 14 major manufacturers use the fiber, according to Chemstrand. This company has launched a program to build up the use of its trademark and is sponsoring a $100,000 wash-and-wear contest to promote Acrilan.

Dynel Is Improved

Dynel, a modacrylic fiber, has been improved. Union Carbide has developed a high-shrinkage fiber called Type 63 to be used in blends of bulking yarns. In boiling water, the fiber shrinks 25% more than regular Dynel.

The company has another variation, Type 97, in the evaluation stage. This fiber is expected to be used in home furnishings.

Four Firms Make Polyester Fiber

Polyester-fiber production will increase rapidly during the next few years. Three new producers already are in the field to capture some of Du Pont's Dacron market. Total production is expected very shortly to reach 200-million lbs. yearly.

Eastman is furthest along with its Kodel in commercial production. Properties are listed on the face of the table.

Beaunit Mills, Inc., is next in line with its Vycron, which will be sold in the form of filament, staple, tow and yarn spun directly from continuous-filament tow. Commercial quantities are expected to be available in the near future.

Fiber Industries recently broke ground for a large plant near Shelby, N. C., to manufacture Teron, a polyester fiber. At this writing, properties are not available. Production capacity is expected to be 40-million lbs.

Fiber Industries is a joint subsidiary of Celanese Corp. and Imperial Chemical Industries, the latter of Britain.

Du Pont recently announced that Type 64 Dacron is now in commercial production. The fiber provides more pill resistance and dyeability in worsted-type fabric than previous Dacrons. Present major outlet is winter-weight suitings.

Another Du Pont development in the polyester field is the stabilization of warp yarns by infrared heating. This treatment reduces the cost of heat stabilization and produces more-uniform fabrics.

Polypropylene Is in Production

Polypropylene, now in commercial production, was added to the face of the table this year under the generic term of olefin. Although somewhat stiffer than linear polyethylene, the new fiber has better resilience and recovery.

Special Notes on New Man-Made Fibers

Corval

Properties of 1.5-den., 1⁹/₁₆-in. Corval staple fiber are:

Breaking tenacity (grams per den.) —2.0 to 2.3 (std.), 1.5 to 1.7 (wet); initial tensile modulus (grams per den.)—35 to 40 (dry), 7 to 8 (wet); breaking elongation (%)—12 to 14 (std.), 14 to 16 (wet); yield point (dry)—0.8 grams per den. stress, 2% strain; water absorbency (%)—13 at 70° F., 65% r.h.; 40 to 50 at 100% r.h. (q-water imbibition); swelling (% increase in dia.)—15 to 20.

In general, Corval is similar to other cellulosic fibers in resistance to acids, bleaching agents, scouring and laundering agents, and common solvents. It is much more resistant to alkalis than viscose-rayon staple and swells much less in caustic-soda solutions of mercerizing strength.

Although Corval fabrics do not degrade as rapidly as other cellulosic fabrics in soil burial tests, the fabrics still have a low resistance against rot and mildew.

Corval can be distinguished from other regenerated-cellulosic fibers by its insolubility in cuprammonium hydroxide and dupraethylene diamine solutions. Striations along the length of the fiber and a serrated cross section are similar to regular-tenacity viscose-rayon staple.

Topel

Properties of 1.5-den., 1⁹/₁₆-in. Topel staple fiber are:

Breaking tenacity (grams per den.) —2.0 to 2.3 (std.), 1.4 to 1.6 (wet); initial tensile modulus (grams per den.)—38 to 42 (dry), 3 to 5 (wet); yield point (dry) — 0.8 grams per den. stress, 2% strain; water absorbency (%)—13 at 70° F., 65% r.h.; 50 at 100% r.h. (q-water imbibition).

Topel in general resembles viscose rayon in its resistance to acids, bleaching agents, scouring and laundering agents, and common solvents. It is more resistant to caustic alkalis. Resistance to bacteriological attack and weathering is about the same as for viscose rayon.

Topel can be distinguished from viscose rayon by its insolubility in cuprammonium hydroxide. Striations along the length of the fiber and serrated cross sections are similar to regular-tenacity viscose-rayon staple.

Vycron

Properties of Vycron are:

Breaking tenacity (grams per den.) —5.6; breaking elongation (%)—35; resilience as measured by work recovery—from 2% extension 93, from 5% extension 44, from 10% extension 33; average toughness — 1.75 grams centimeter per centimeter denier; water absorbency (%)—0.6 at 70° F., 65% r.h.; specific gravity—1.36; effect of heat—melting point 455° F.

Vycron has good resistance to common solvents and cleaning agents, weathering, and pilling. Other advantages claimed are ease of processing on standard spinning systems, good fiber-to-fiber cohesion, strength, good dyeing properties and fastness, and ease of care.

To produce a fabric with good dimensional stability, heat setting is necessary. In fabrics where the blend contains a high percentage of rayon or cotton, thermosetting resins or compressive shrinkage may be necessary.

Fiber 40

Properties of Fiber 40 are:

Breaking tenacity (grams per den.) —3.20 (std.), 2.15 (wet), 2.50 (std. loop), 1.44 (std. knot); tensile strength (lbs. per sq. in.)—62,200; breaking elongation (%)—9.5 (std.), 10.5 (wet); elastic recovery (%)—data unavailable; average stiffness (grams per den.)—34; average toughness—0.15; specific gravity—1.46 to 1.52; water absorbency (%)—12 at 70° F., 65% r.h.; 27 at 70° F., 95% r.h.

Fiber 40 does not melt; it loses strength at 300° F. and decomposes at 350 to 400° F. Resistance to acids is similar to that of cotton; strong solutions of alkali cause swelling and reduce strength.

The fiber is attacked by strong oxidizing agents but is not damaged by normal hypochlorite or peroxide bleaches. It is generally insoluble in organic solvents but will dissolve in cuprammonium and a few complex compounds. Mildew attacks the fiber.

Dyes used, the same as for other cellulosic fibers, include direct, diazotized and developed, vat, sulfur, and reactive types.

Fiber 40 can be distinguished by its insolubility in acetone; it does not melt and burns readily with a fine ash.

Principal Producers of Man-Made Fibers in the United States

Allied Chemical Corp.
National Aniline Div.
261 Madison Ave.
New York 16, N. Y.

American Cyanamid Co.
Fibers Div.
111 W. 40th St., New York 18, N. Y.

American Enka Corp.
530 Fifth Ave., New York 36, N. Y.

American Viscose Corp.
350 Fifth Ave., New York 1, N. Y.

Beaunit Mills, Inc.
261 Fifth Ave., New York 16, N. Y.

Beaunit Mills, Inc.
American Bemberg Div.
261 Fifth Ave., New York 16, N. Y.

Beaunit Mills, Inc. Coosa Pines Div.
Coosa Pines, Ala.

Carborundum Co.
P.O. Box 337, Niagara Falls, N. Y.

Celanese Corp. of America
180 Madison Ave.
New York 16, N. Y.

Chemstrand Corp.
350 Fifth Ave., New York 1, N. Y.

Courtaulds (Alabama) Inc.
600 Fifth Ave., New York 20, N. Y.

Dawbarn Bros., Inc.
Waynesboro, Va.

Dow Chemical Co.
Williamsburg, Va.

E. I. du Pont de Nemours & Co., Inc.
Wilmington 98, Del.

Eastman Chemical Products, Inc.
Fibers Div.
260 Madison Ave.
New York 16, N. Y.

Fair Haven Mills, Inc.
Fair Haven, Vt.

Ferro Corp.
Fiber Glass Div.
200 Woodycrest Ave.
Nashville 11, Tenn.

Firestone Plastics Co.
45 Rockefeller Plaza,
New York 20, N. Y.

General Tire & Rubber Co.
Bolta Products Div.
Akron, Ohio

B. F. Goodrich Chemical Co.
Div. of B. F. Goodrich Co.
3135 Euclid Ave., Cleveland 15, Ohio

Hartford Fibres Co.
Div. of Bigelow-Sanford Carpet Co.
140 Madison Ave.
New York 16, N. Y.

Hercules Powder Co., Inc.
Wilmington 99, Del.

Industrial Rayon Corp.
500 Fifth Ave., New York 36, N. Y.

Johns-Manville Fiber Glass, Inc.
1810 Madison Ave., Toledo 1, Ohio

Modiglass Fibers, Inc.
Nicolet Ave., Florham Park, N. J.

National Plastic Products Co.
Odenton, Md.

New Bedford Rayon Div.
Mohasco Industries, Inc.
295 Fifth Ave., New York 16, N. Y.

North American Rayon Corp.
261 Fifth Ave., New York 16, N. Y.

Oriented Plastics, Inc.
Pembroke, N. H.

Owens-Corning Fiberglas Corp.
Textile Products Div.
717 Fifth Ave., New York 22, N. Y.

Pittsburgh Plate Glass Co.
Fiber Glass Div.
One Gateway Center,
Pittsburgh 22, Pa.

Poliafil, Inc.
311 Palm St., Scranton 5, Pa.

Polymers, Inc.
Middlebury, Vt.

Polyarns, Inc.
545 N. Main St., Canandaigua, N. Y.

Reeves Brothers, Inc.
54 Worth St., New York 13, N. Y.

Saran Yarns Co.
Odenton, Md.

Skenandoa Rayon Corp.
261 Fifth Ave., New York 16, N. Y.

Southern Lus-Trus Corp.
P.O. Box 3386, Jacksonville 6, Fla.

Union Carbide Chemicals Co.
Div. of Union Carbide Corp.
100 E. 42nd St., New York 17, N .Y.

U. S. Rubber Co.
1230 Avenue of the Americas,
New York 20, N. Y.

Terminology and References

Note: These are simplified definitions. For complete definitions, see ASTM *Standards on Textile Materials.*

Breaking Tenacity—Tensile stress at rupture of a specimen, expressed by grams per denier.

Tensile Strength—Tensile stress at rupture of a specimen, expressed by pounds per square inch.

Elongation—The extension (in the direction of load) of a fiber, caused by a tensile force. Expressed as a percentage of original length, elongation may be measured either at the point of break or at a specified load.

Elastic Recovery—The percentage of extension immediately recovered by a fiber after removal of a tensile force. (A thorough discussion of this property will be found in *Textile Fibers, Yarns & Fabrics,* Kaswell, E. R., Reinhold Publishing Co., N. Y., pp. 32 to 47.)

Average Stiffness—The ability of a fiber to carry a load without deformation. This property is based on the modulus of elasticity. (Source: *19th Edgar Marburg Lecture,* by H. DeW. Smith, ASTM, Philadelphia, pp. 16 to 18.)

Average Toughness—The ability of a fiber to endure large, permanent deformations without rupture. (Source: H. DeW. Smith; see Avg. Stiffness.)

Specific Gravity—The simple ratio of the weight of a given volume of the fiber to an equal volume of water, taken as standard at stated temperatures.

Water Absorbency—Covers moisture regain, moisture absorbency, and q-water imbibition at specified temperatures and humidities. Q-water imbibition, a new property this year, is the water absorbency of a fiber at 100% r.h. when the equilibrium is approached from the wet side. The calculation usually is made with this formula:

$$q = \frac{\text{weight of centrifuged fiber} - \text{bone-dry weight}}{\text{bone-dry weight} \times 100}$$

(Source: Celanese Corp.)

Man-Made Fibers Take Bigger Slice of Market

- Man-made fibers' share of total U. S. fiber consumption increased 8.2% from 1949 through 1958; and the trend continues upward because of changing patterns in consumer markets.

Man-made fibers increased their share of total fiber consumption from 20% in 1949 to 28.2% in 1958, according to a study made by the Textile Economics Bureau.

Total fiber consumption rose from 5,439,900,000 lbs. in 1949 to 5,797,200,000 lbs. in 1958. Total 1958 consumption was down 3% from 1957.

End use figures for 1958 are not yet available, but in 1957 home furnishings absorbed the greatest poundage of fibers with a consumption of 1,515,500,000 lbs. In this category, cotton accounted for 980,300,000 lbs., wool 159,900,000 lbs., and man-made fibers 375,300,000 lbs. Comparative 1949 figures were: total fibers 1,066,000,000 lbs., cotton 760,800,000 lbs., wool 219,800,000 lbs., and man-made fibers 85,500,000 lbs.

In the industrial-uses category, where the greatest poundage of man-made fibers was consumed in 1957, the total poundage of all industrial fibers has generally decreased relative to the expanding industrial sector of the economy. This trend points up the greater "utility" poundage of the man-made fibers in industrial applications, especially in the tire industry. (Utility poundage is a measure that takes into consideration processing losses, fabric weight, strength, and deterioration factors of man-made versus natural fibers.)

Geographically, the Piedmont area of the South, consisting of North and South Carolina and Virginia and West Virginia, consumed the greatest quantity of cellulosic fibers in 1958. The area absorbed 231,300,000 lbs. (36%) of the filament-yarn production and 228,000,000 lbs. (59½%) of the staple and tow total.

Many Factors Affect Consumption

Here are some of the many factors that are affecting fiber consumption:

- The trend toward lighter apparel has increased the use of cloth weigh-

U.S. Fiber Consumption
(millions of pounds)

	1949	% of total	1957	% of total
Rayon & acetate	993.5		1,177.1	
Noncellulosic	85.2		470.9	
Textile glass	7.6		91.1	
Total (man-made)	1,086.3	20	1,739.1	28.2
Cotton	3,838.2	70.5	4,039.9	65.5
Wool	511.0	9.4	379.0	6.2
Silk	4.4	0.1	5.9	0.1
Total (all fibers)	5,439.9		6,163.9	

Du Pont introduced several new lon products and reintroduced Or- filament. Orlon Cantrece, an ylic filament, now in small-scale oduction, is being evaluated as a sic filament supply yarn for tex- ring sweaters.

The yarn is designed to give the el and look of silk in knitwear. At esent, it is available only in 20- n., 80-filament, semidull yarn. The w filament is said to be much more eable than previous filament lon.

Type 25 Orlon staple was put on e market late in 1958 for use on tton-system spinning.

Two years ago, Acrilan was new the carpet field. Today 14 major nufacturers use the fiber, accord- to Chemstrand. This company s launched a program to build up e use of its trademark and is spon- ring a $100,000 wash-and-wear ntest to promote Acrilan.

ynel Is Improved

Dynel, a modacrylic fiber, has en improved. Union Carbide has veloped a high-shrinkage fiber lled Type 63 to be used in blends bulking yarns. In boiling water, e fiber shrinks 25% more than reg- ar Dynel.

The company has another varia- n, Type 97, in the evaluation ge. This fiber is expected to be ed in home furnishings.

ur Firms Make Polyester Fiber

Polyester-fiber production will in- ease rapidly during the next few ars. Three new producers already e in the field to capture some of u Pont's Dacron market. Total oduction is expected very shortly reach 200-million lbs. yearly.

Eastman is furthest along with its odel in commercial production. roperties are listed on the face of e table.

Beaunit Mills, Inc., is next in e with its Vycron, which will be ld in the form of filament, staple, w and yarn spun directly from con- uous-filament tow. Commercial antities are expected to be avail- le in the near future.

Fiber Industries recently broke round for a large plant near Shelby, . C., to manufacture Teron, a poly- ter fiber. At this writing, properties e not available. Production capac- is expected to be 40-million lbs.

Fiber Industries is a joint subsidi- y of Celanese Corp. and Imperial hemical Industries, the latter of ritain.

Du Pont recently announced that pe 64 Dacron is now in commer- al production. The fiber provides ore pill resistance and dyeability worsted-type fabric than previous acrons. Present major outlet is nter-weight suitings.

Another Du Pont development in e polyester field is the stabilization warp yarns by infrared heating. is treatment reduces the cost of at stabilization and produces ore-uniform fabrics.

olypropylene Is in Production

Polypropylene, now in commer- al production, was added to the ce of the table this year under the eneric term of olefin. Although mewhat stiffer than linear poly- hylene, the new fiber has better silience and recovery.

Polyethylene has been improved so that the filament is stabilized under exposure to ultraviolet irradiation. This makes the fiber suitable for use in fabrics for outdoor use. An all-polyethylene auto seat cover has just been put on the market.

A line of olefin fibers tailored for a wide variety of end uses is now being produced by United States Rubber Co. Called Royalene, the polyethylene and polypropylene fibers are said to be suitable for applications ranging from nautical ropes to coaxial-cable braid.

Six types of fibers are produced for groups of end uses demanding special characteristics. Offered in round, flat, oval, or ribbon shapes and in six colors, the six types are:

Type A – a high-tenacity linear polyethylene having high strength, heat, abrasion, and chemical resistance.

Type C – compounded for shrinkage, heat, and chemical resistance and designed to produce three-dimensional and other unusual effects.

Type E – a fiber with very high shrinkage in boiling water, which makes it useful for special effects either alone or with other fibers.

Type L – an electrical grade for application requiring conformity to laboratory specifications for insulation.

Type P – a polypropylene for higher heat resistance and resistance to creep under sustained loading. This fiber also lends itself to multifilament applications.

Type N – a high-density copolymer polyethylene with good resistance to creep under load.

Other developments in the olefin field include the organization of Avisun Corp. to produce polypropylene. The new firm, equally owned by American Viscose Corp. and Sun Oil Corp., is building a pilot plant near New Castle, Del., to manufacture continuous-filament and staple fiber.

Another group of companies, Humble Oil Refining Co., Enjay Co., Inc., and Spencer Chemical Co., is building a plant in Texas to produce polypropylene. Hercules Powder Co. started manufacture more than a year ago.

Darvan Has Improved Properties

Darvan is still in pilot production at B. F. Goodrich Chemical Co.'s plant, Avon Lake, Ohio. Properties of the nytril fiber have been improved and its end uses broadened.

Density of Darvan is among the lowest in the line-up of man-made fibers. Resistance to weathering, mildew, insects, acids, and prolonged exposure to heat is said to be equal or better than that of most other fibers.

Although neither an acrylic nor a polyester, Darvan has some of the characteristics of both. Behind the fiber is a new technology in vinylidene-dinitrile chemistry.

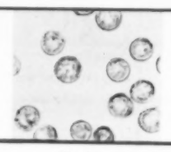
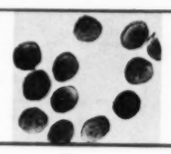
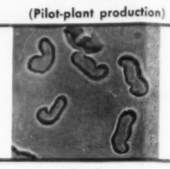
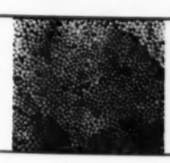
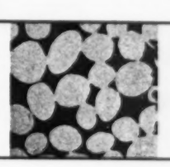
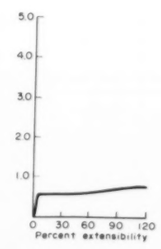
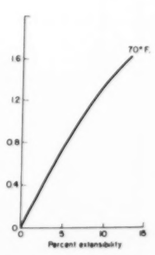
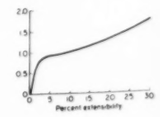
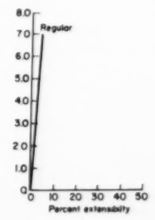
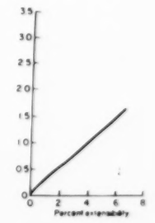
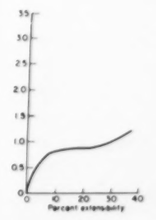
The fiber was developed in an effort to combine the good qualities of natural fibers with the ease-of-care properties of the newer man-made fibers. End uses are in such fields as deep-pile fabrics, knitwear, and suiting; another anticipated usage is in industrial applications involving elevated temperatures and acid conditions.

Other Man-Made Fibers in or Scheduled for Commercial Production

For other fibers in commercial production, see opposite side of table and special notes on this side of table.

Comparative Properties of Natural Fibers

The figures given below are an approximation of values. Since the natural fibers are not under the control of man, physical properties vary widely from crop to crop and with locale and other variables.

Properties *Data on fiber properties obtained from the fiber manufacturers.* *(See "Terminology and References")*	VINYON A manufactured fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of at least 85% by weight of vinyl-chloride units (–CH_2–CHCl–).	FLUORO-CARBON A manufactured fiber in which the fiber-forming substance consists of long chains of carbon molecules with all available bonds saturated with fluorine. (Manufacturer's definition.) *Teflon	NYTRIL A manufactured fiber containing at least 85% of a long-chain polymer of vinylidene dinitrile (–CH_2–$C(CN)_2$–) where the vinylidene-dinitrile content is no less than every other unit in the polymer chain. *Darvan (Pilot-plant production)	GLASS A manufactured fiber in which the fiber-forming substance is glass. (16 CFR §303.7)	COTTON	WOOL
Microscopic Cross Section *Cross sections shown are representative of the type of fiber.*						
	Staple	Filament	Staple	Filament		
Breaking Tenacity (grams per den.) Std.	0.7 to 1.0	1.6	2.0	6.0 to 7.3	Amer. Upland: 3.0 to 4.9	1.0 to 1.7
Wet	0.7 to 1.0	1.6	1.7	3.9 to 4.7	Amer. Upland: 3.3 to 6.37	0.76 to 1.63
Std. Loop		1.2		0.9 to 1.1		
Std. Knot		1.3		1.8 to 2.2		
Tensile Strength (lbs. per sq. in.)	12,- to 17,000	47,000	30,000	200,- to 220,000	44,- to 109,000	20,- to 29,000
Breaking Elongation (%) Std.	100 to 120	13	30	3.0	3 to 7	25 to 35
Wet		13	30	2.5		25 to 50
Elastic Recovery (%)			100 at 3% 75 at 5%	100	74 at 2%, 45 at 5%	99 at 2%, 63 at 20%
Average Stiffness (gpd.)	1.5	12	7	322	57 to 60	3.9
Average Toughness	1.3	0.12	0.3	0.07	0.15	0.25
Specific Gravity		2.3	1.2	2.54	1.54	1.32
Water Absorbency (%)						
70° F., 65% r.h.	Up to 0.5	0	2 to 3	None	7	16
70° F., 95% r.h.	0.1	0		Up to 0.3% (surface).	24 to 27	21.9 at 77° F., 90% r.h.
100% r.h. (q-water imbibition)						
Effect of Heat	Becomes tacky and shrinks at 150° F., softens at about 170° F., melts at 260° F. Will not support combustion.	Very high heat resistance. No degradation at temperatures up to 400° F. Sublimation rate (weight loss) at 554° F. = 0.0002% per hr.; at 806° F. = 1.5% per hr. Vapors toxic.	Retains 100% of strength after 195 days in air at 300° F. Sticking point 340° F.	Will not burn; loses up to 50% tensile strength at 650° F. Strength continues to decline to softening point at 1,350° F.	Highly resistant to degradation. Yellows at 248° F. after 5 hrs., decomposes at 302° F.	Becomes harsh at 212° F., decomposes at 266° F., scorches at 400° F., chars at 572° F. (Depends on duration of heating and moisture content.)
Effect of Acids	None.	Inert.	Little effect even at high concentrations.	Resists most acids.	Disintegrated by hot dilute acids or cold concentrated acids. Unaffected by cold weak acids.	Destroyed by hot sulfuric acid; resistant to other strong and weak acids, even when hot.
Effect of Alkalis	None.	Inert.	Fair to good resistance to weak alkalis.	Resists most alkalis.	Swelling (mercerization) in caustic, but no damage.	Destroyed by strong alkalis; attacked by weak alkalis. Felts with agitation in mild alkalis.
Effect of Other Chemicals	Generally resistant.	Only substances known to react with the fiber are alkali metals, fluorine gas at high pressure and temperature, and chlorine trifluoride.	Generally good resistance.	Generally good.	Bleached by hypochlorites and peroxides; oxidizes into oxycellulose. Swells and disintegrates in cuprammonium hydroxide.	Bleached by peroxides or SO_2.
Effect of Organic Solvents	Soluble in ketones and some chlorinated hydrocarbons; swells and softens in ethers, esters, aromatic hydrocarbons, dioxane, propylene oxide.	Inert.	Generally insoluble.	Unaffected.	Resistant.	Resistant.
Dyes Used	Dyed with disperse dyes with aid of certain swelling agents; solvent methods; pigment dyeing.		Disperse (acetate) and cationic and azoic dyes with a carrier.	Resin-bonded pigments. Special technique utilizing protein film applied during manufacture for vat, direct, acid, and chrome.	Direct, vat, azoic, basic, mordant, pigment, sulfur.	Acid, milling, chrome, mordant, vat, indigo.
Resistance to Mildew	Not attacked.	Not weakened.	Not attacked.	Not attacked. (Binder may be, however.)	Poor unless bleached or acetylated.	Good.
Identification	Softens at a relatively low temperature 170° F.; melts before burning; does not support combustion; insoluble in acetone; insoluble in 90% phenol.	Nonflammable. Fiber has a soft and slippery hand. Insoluble in boiling concentrated sulfuric acid, concentrated hydrofluoric acid, concentrated sodium hydroxide, or organic solvents.	Calco Identification Stain #2 tints fiber grayish pink. Dissolves in dimethyl formamide at room temperature. Insoluble in acetone at room temperature.	Does not burn.	Burns rapidly, leaves fine gray ash and no bead. Longitudinal appearance is flat and ribbon-like with convolutions. Dissolves in 80% cold sulfuric acid.	Burns with odor of burning feathers, leaves brittle, shiny bead. Yellows in nitric acid. Has longitudinal scales.
Typical Stress-Strain Curves (load in grams per denier)						

...ocessing losses, fabric weight, ...ength, and deterioration factors of ...an-made versus natural fibers.)

Geographically, the Piedmont ...ea of the South, consisting of ...orth and South Carolina and Vir...nia and West Virginia, consumed ...e greatest quantity of cellulosic fi...ers in 1958. The area absorbed ...1,300,000 lbs. (36%) of the fila...ent-yarn production and 228,000,...00 lbs. (59½%) of the staple and ...w total.

...any Factors Affect Consumption

Here are some of the many factors ...at are affecting fiber consumption:

- The trend toward lighter apparel ...s increased the use of cloth weighing less per yard and having fewer yards to the garment in many instances.
- Color and style elements in such items as women's dresses lead to obsolescence of clothing before they are worn out.
- Changing habits of consumers, such as the trend to use sport shirts for both casual wear and work, has affected the work-clothing market.
- Shorter work week and higher living standards have increased the demand for leisure-wear clothing, apparently without decreasing the demand for business-wear items.
- Increasing numbers of children have caused gains in fiber consumption for children's wear.

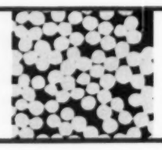
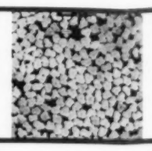
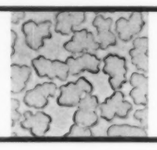
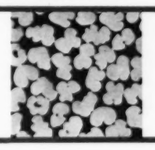
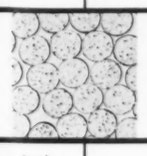
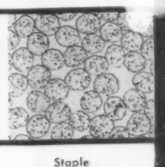
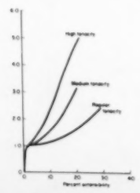
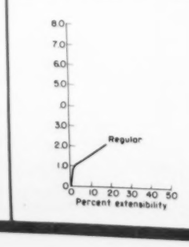
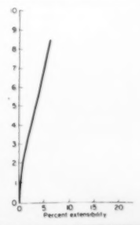
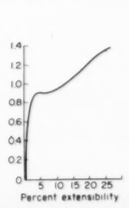
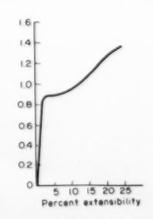
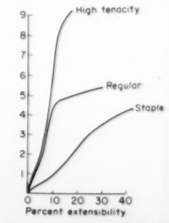
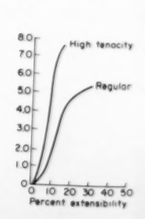
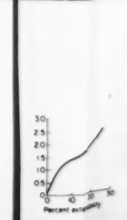
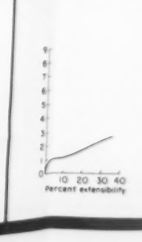
U.S. Fiber Consumption
(millions of pounds)

% of total	1957	% of total	1958	% of total
	1,177.1		1,107.8	
	470.9		470.5	
	91.1		107.8	
20	1,739.1	28.2	1,686.1	28.2
70.5	4,039.9	65.5	3,941.5	65.9
9.4	379.0	6.2	346.4	5.8
0.1	5.9	0.1	5.2	0.1
	6,163.9		5,979.2	

TEXTILE WORLD'S MAN-MADE-FIBER TABLE—1959

See opposite side of table for vinyon, Darvan, Teflon, Corval, Topel, glass, Vycron, and natural fibers.

Asterisks denote tradenames.

Properties *Data on fiber properties obtained from the fiber manufacturers.* *(See "Terminology and References" on opposite side of table)*	**RAYON** A manufactured fiber composed of regenerated cellulose, as well as manufactured fibers composed of regenerated cellulose in which substituents have replaced not more than 15% of the hydrogens of the hydroxyl groups.						**ACETATE** A manufactured fiber in which the fiber-forming substance is cellulose acetate. Where not less than 92% of the hydroxyl groups are acetylated, the term triacetate may be used as a generic description of the fiber.		**NYLON** A manufactured fiber in which the fiber-forming substance is any long-chain synthetic polyamide having recurring amide groups (—C—NH—) as an integral part of the polymer chain. O						**A** A manufactured fiber in which the thetic polymer composed of at least
	Viscose			**Cuprammonium**	***Fortisan**		**Acetate**	***Arnel** (Triacetate)	**Nylon 6,6**			**Nylon 6**			***Orlon**	***Acrilan**
Microscopic Cross Section *Cross sections shown are representative of the type of fiber.*																
	Regular	Intermediate Tenacity	High Tenacity Filament and Staple	Filament	Regular Filament	Fortisan-36 Filament	Filament and Staple	Filament and Staple	Filament Regular	Filament High Tenacity	Staple	Filament Regular	Filament High Tenacity	Staple	Staple	Staple
Breaking Tenacity (grams per den.) Std.	1.5 to 2.4	2.4 to 3.2	3.0 to 5.0	1.7 to 2.3	6 to 7	Over 8.0	1.3 to 1.5	1.2 to 1.4	4.6 to 5.9	5.9 to 9.2	4.0 to 7.2	4.5 to 5.8	6.8 to 8.6	3.8 to 5.5	2.2 to 2.6	2.0 to 2.7
Wet	0.7 to 1.4	1.2 to 1.9	1.9 to 3.6	0.95 to 1.35	85% of tenacity at standard conditions.	75 to 80% of tenacity at standard conditions.	0.8 to 1.2	0.8 to 1.0	4.0 to 5.2	5.1 to 7.9	3.5 to 6.1	4.3 to 5.3	5.4 to 7.5		1.8 to 2.1	80% of dry strength
Std. Loop	1.0 to 1.5	1.5 to 2.2	2.3 to 2.5	1.0 to 2.6		50% of yarn strength.	0.9 to 1.3	1.1 to 1.2	3.9 to 5.1	5.0 to 7.6	3.7 to 5.9	3.8 to 5.4	7.0		1.8 to 2.1	
Std. Knot	0.7 to 1.4	1.4 to 2.1	2.2 to 2.4	0.7 to 1.7		40% of yarn strength.	0.9 to 1.3	1.0 to 1.2	3.9 to 5.1	5.0 to 7.6	3.7 to 5.9	3.8 to 5.3	6.1			
Tensile Strength (lbs. per sq. in.)	29,- to 46,000	46,- to 65,000	65,- to 105,000	33,000 to 44,500	136,000	Over 155,000	22,- to 28,000	20,- to 26,000	67,- to 86,000	86,- to 134,000	58,- to 105,000	73,- to 84,000	109,- to 125,000	70,- to 80,000	32,- to 39,000	30,- to 40,000
Breaking Elongation (%) Std.	15 to 30	15 to 20	9 to 22	10 to 17	6	6.2	23 to 34	22 to 28 for filament. 35 to 40 for staple.	26 to 32	16 to 28	16 to 42	24 to 40	16 to 17.5	37 to 50	20 to 28	36 to 40
Wet	20 to 40	17 to 30	14 to 30	17 to 33	6	6	30 to 45	30 to 40 for filament.	30 to 37	18 to 32	18 to 46	28 to 42	19 to 24	42 to 46	26 to 34	44 to 49
Elastic Recovery (%)	30 to 74 at 4%	97 at 2%	70 to 100 at 2%	17 to 75	100 at 20% of breaking elongation. 60 at 40% of breaking elongation.	85 at 2% elongation. 70 at 5% elongation.	48 to 65 at 4%	88 at 3% elongation. 43 at 10% elongation.	100 at 2% 100 at 8%	100 at 4%		100 at 2% 100 at 8%	100 at 4%	100 at 2%		99 at 2% 89 at 5%
Average Stiffness (gpd.)	11.1	16.6	25.5 to 29	15.5	117	135	5.5	5.2	18	35 (Du Pont) 49 (Chemstrand)	10 to 45	23	48	17 to 20	10	7
Average Toughness	0.19	0.21	0.22 to 0.30	0.14	0.21	0.26	0.17	0.16	0.76	0.83	0.58 to 0.84	0.67	0.75	0.64 to 0.78	0.40	0.46
Specific Gravity	1.46 to 1.52			1.52 to 1.54	1.5	1.5	1.32	1.3	1.14			1.14			1.14 to 1.17	1.17
Water Absorbency (%) 70° F., 65% r.h.	13; 11 is commercial standard.			12.5; 11 is commercial standard.	10.7	9.6	6	3.2	4.5			4 to 5			1.5	1.5
70° F., 95% r.h.	27			27	20	20	14	8.8	8			6.5 to 8.5			2.5	5
100% r.h. (q-water imbibition)					36 to 40	55 to 60	22 to 24	13 to 16								
Effect of Heat	Does not melt. Loses strength at 300° F. Decomposes at 350 to 400° F.			Decomposes at about 300° F.	Scorches in ironing at about 20° C. higher than cotton; otherwise like other cellulosic yarns.	In general, same as cotton. Highly resistant to degradation. Decomposes at temperatures above 300° F.	Becomes sticky at 350 to 375° F.; softens at 400 to 445° F.; melts at 500° F.; burns relatively slowly.	Melts at approximately 300° C. (572° F.). Heat-treated Arnel will not stick when ironed at temperatures up to 250° C. (482° F.).	Melts at 482° F.; yellows slightly at 300° F. when held for 5 hrs.			Melts at 420° F., yellows slightly at 300° F. when held for 5 hrs.			Retains 100% strength after 32 days in air at 257° F. Sticking point 455° F. (Copper-block method).	5% shrinkage at 487° F.
Effect of Acids	Similar to cotton; hot dilute or cold concentrated disintegrate fiber.			Similar to viscose; hot dilute or cold concentrated disintegrate fiber.	Similar to cotton and viscose; hot dilute or cold concentrated acids disintegrate fiber.	Similar to cotton and rayon; hot dilute or cold concentrated acids disintegrate fiber.	Concentrated solutions of strong acids decompose.	Similar to acetate; unaffected by dilute solutions of weak acids; strong acids may cause deterioration.	Boiling in 5% hydrochloric acid ultimately causes disintegration; dissolves with at least partial decomposition in cold concentrated solutions of hydrochloric, sulfuric, and nitric acids.			Oxidizing agents and mineral acids such as hydrochloric and sulfuric cause degradation. Others such as benzoic and oxalic will cause loss in tenacity and elongation depending upon time and concentrations.			Good to excellent resistance to mineral acids.	Good to excellent resistance to mineral acids.
Effect of Alkalis	Strong solutions cause swelling and reduce strength.			Dilutes have little effect; strong solutions cause swelling, loss of strength, and ultimate disintegration.	Similar to cotton and viscose; strong solutions cause swelling and reduce strength.	Similar to cotton and rayon; strong solutions cause swelling and reduce strength.	Strong alkalis saponify into regenerated cellulose.	Little effect at 9.5 pH under normal scouring and dyeing conditions; saponified by high alkali concentrations.	Substantially inert.			Substantially inert.			Fair to good resistance to weak alkalis.	Fair to good resistance to weak alkalis; moderate resistance to strong, cold solutions.
Effect of Other Chemicals	Attacked by strong oxidizing agents, not damaged by hypochlorite or peroxide bleaches.			Not attacked by oxidizing agents; not damaged by hypochlorite or peroxide bleaching solutions.	Similar to cotton; bleached by hypochlorites and peroxides. Oxidizes into oxycellulose. Swells and disintegrates in cuprammonium hydroxide.	Similar to cotton; bleached by hypochlorites and peroxides. Oxidizes into oxycellulose. Swells and disintegrates in cuprammonium hydroxide.	Attacked by strong oxidizing agents; not damaged by hypochlorite or peroxide bleaching solutions; soluble in phenol.	Attacked by strong oxidizing agents; not damaged by hypochlorite or peroxide bleaching solutions.	Generally good resistance.			Generally good resistance.			Not harmed by oils, greases, neutral salts, and some acid salts.	Good resistance to a wide range of chemicals.
Effect of Organic Solvents	Generally insoluble; soluble in cuprammonium and a few complex compounds.			Insoluble; soluble in cuprammonium solutions and some other compounds.	Resistant; similar to cotton and other rayons.	Resistant; similar to cotton and other rayons.	Soluble in acetone, concentrated and glacial acetic acid, some other solvents.	Unaffected by common solvents; swollen by acetone, other ketones, and trichloroethylene. Soluble in methylene chloride.	Generally insoluble; soluble in some phenolic compounds and in concentrated formic acid.			Generally insoluble; soluble in some phenolic compounds and in concentrated formic acid.			Not harmed by common solvents.	Insoluble in common solvents such as benzene, petroleum ether, acetone, ethanol, carbon tetrachloride, etc.
Dyes Used	Same as for cotton; medium- and high-tenacity are harder to dye.			Similar to viscose rayon and cotton.	Cotton colors; rate of dyeing slower than cotton.	Cotton colors, rate of dyeing slower.	Same as for triacetate.	Disperse azoic (acetate) dyes, developed (azo) colors, vat, acid, and basic dyes can be applied by special methods.	Disperse and acid are usually preferred, but most other classes are also used.			Has a marked affinity for all types of dyestuffs, including direct, acid, premetallized acid, chrome, and vat colors as well as the newer complex types. New color effects may be obtained in cross-dyeing when used in conjunction with other types of nylon.			Cationic, disperse, acid (copper technique), and selected vat and naphthol.	Disperse, basic, neutral, premetallized, acid, chrome, and neutral dyes.
Resistance to Mildew	Attacked.			Attacked.	Attacked.	Attacked.	High (discoloration only).	Extra high.	Not attacked.			Not attacked.			Not attacked. (Material on the fiber may be attacked.)	Not attacked. (Material on the fiber may be attacked.)
Identification	Does not melt; burns readily with little ash; insoluble in acetone.			Does not melt; burns with but little ash; insoluble in acetone; dissolves in ammoniacal copper solution.	Fine cross section similar to acetate, but reacts same as cellulose.	General tests used for high-strength rayon.	Will melt in presence of flame, forms hard black ball on tip; soluble in acetone; insoluble in methyl chloride.	Soluble in methylene chloride alcohol; separated from acetate by hot benzyl alcohol.	Melts before burning, self-extinguishing; insoluble in acetone or boiling NaOH solutions; soluble in concentrated formic acid and xylenol.			Melts before burning, self-extinguishing; insoluble in acetone or boiling NaOH solutions; soluble in concentrated formic acid and xylenol. Dissolves slowly in chloral hydrate.			Melts and burns, leaving hard, black bead. Not affected by glacial acetic acid, chloroform, acetone, or 88% formic acid.	Burns, leaving hard, black bead. Generally round cross section. Insoluble in acetone, formic acid, 70% H_2SO_4, sodium hypochlorite. Soluble in dimethyl formamide.
Typical Stress-Strain Curves (load in grams per denier)																

959 Revision

Compiled by the Editors of TEXTILE WORLD

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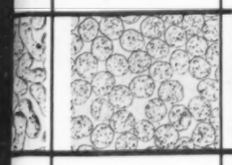
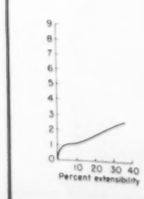
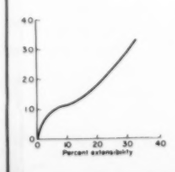
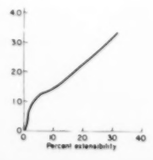
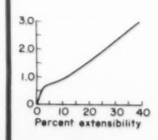
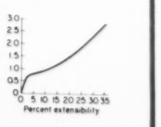
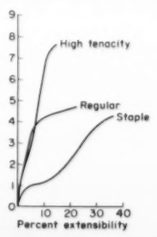
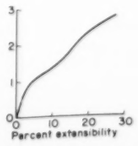
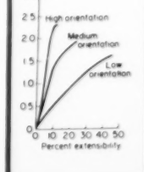
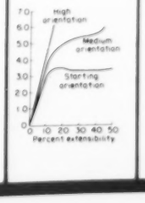
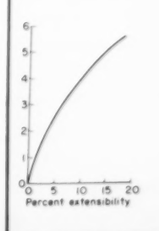
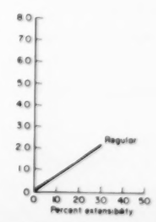
	ACRYLIC			MODACRYLIC		POLYESTER				OLEFIN			SARAN		
	A manufactured fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of at least 85% by weight of acrylonitrile units (—CH_2—CH(CN)—).			A manufactured fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of less than 85% but at least 35% by weight of acrylonitrile units (—CH_2—CH(CN)—).		A manufactured fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of at least 85% by weight of an ester of a dihydric alcohol and terephthalic acid (p—HOOC—C_6H_4—COOH).				A manufactured fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of at least 85% by weight of ethylene, propylene, or other olefin units.			A manufactued fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of at least 80% by weight of vinylidene-chloride units (—CH_2—CCl_2—).		
										Polyethylene		Polypropylene (Isotactic)			
	*Acrilan	*Zefran	*Creslan	*Dynel	*Verel	*Dacron			*Kodel	Conventional polyethylene (Low density)	Linear polyethylene (High density)				
															
	Staple	Staple	Staple	Staple	Staple	Filament: Regular	Filament: High Tenacity	Staple	Staple	Monofilament	Monofilament	Monofilament	Monofilament	Continuous Filament	Staple
	2.0 to 2.7	3.5	3.3	3.0	2.5 to 2.8	4.4 to 5.0	6.3 to 7.8	3.2 to 4.3	2.5 to 3.0	1.0 to 3.0	5.0 to 7.0	4.8 to 7.0	1.15 to 2.3	Up to 2	Up to 1.5
	80% of dry strength	3.1	3.3	3.0	2.4 to 2.7	4.4 to 5.0	6.3 to 7.8	3.2 to 4.3	2.5 to 3.0	1.0 to 3.0	5.0 to 7.0	4.8 to 7.0	1.15 to 2.3	Up to 2	Up to 1.5
						4.0 to 4.6		3.0 to 3.9	2.1 to 2.6			3.5	0.7 to 1.0	1.2	
										1.0 to 2.5	3.0 to 4.5	3.5 to 5.0	1.0 to 1.2	1.3	
	30,- to 40,000	53,000	41,000	50,000	42,- to 47,000	77,- to 88,000	111,- to 138,000	56,- to 76,000	39,- to 47,000	11,- to 35,000	50,- to 90,000	50,- to 90,000	15,- to 45,000 oriented.	44,000	33,000
	36 to 40	33	32	39	33 to 35	19 to 25	10 to 14	25 to 36	24 to 30	20 to 80	10 to 20	15 to 25	15 to 25 unoriented. 20 to 30 oriented.	15 to 25 at break	15 to 25 at break
	44 to 49	33	32	39	32 to 34	19 to 25	10 to 14	25 to 36	24 to 30	20 to 80	10 to 20	15 to 25	Same wet	Same wet	Same wet
	99 at 2% 89 at 5%	99 at 2% 72 at 10%	90 at 1% 67 at 3% 48 at 5%	100 at 2% 98 at 5% 95 at 10%	88 at 4% elongation. 55 at 10% elongation.	97 at 2% 80 at 8%	100 at 2% 90 at 8%		90 to 97 at 2%	Up to 95 at 5% 88 at 10%	Up to 95 at 5% 80 to 85 at 10%	98 at 5% 95 at 10%	95 at 10% (slow)	95 at 10% (slow)	95 at 10% (slow)
	7	11	10.3	7.7	8.0	21	56 to 63	12	11	2 to 12	20 to 50	20 to 60	7 to 10	8 to 12	3 to 8
	0.46	0.58	0.53	0.58	0.46	0.48 to 0.55	0.32 to 0.55	0.40 to 0.77	0.37	0.3			0.165 to 0.265	0.15	0.13
	1.17	1.19	1.18	1.30 at 25° C.	1.37	1.38			1.22	0.92	0.95 to 0.96	0.90 to 91	1.70 ± 0.005		
	1.5	2.5	1.3	0.4	3.5 to 4	0.4 or 0.8 (depends on type)			0.4	None	None	None	None		
	5	5	2.6	Close to 1					0.8	Less than 0.01	Less than 0.01	Less than 0.01	0.1		
trength in air at g point er-block	5% shrinkage at 487° F.	490° F. sticking temperature.	450° F. sticking temperature.	Will not support combustion. Shrinkage starts at 250° F. in untensioned state unless stabilized at a higher temperature.	Will not support combustion. Exposure to excessive pressure or temperatures over 300° F. causes stiffening and discoloration.	Melts at 480° F.			Fiber shrinkage at boil 0 to 1%, melts at 290 to 295° C., safe ironing at 400 to 425° F., breaks under load of 0.05 grams per denier at 260 to 265° C.	5 to 8% shrinkage at 165° F., 50 to 60% shrinkage at 212° F.; melts at 230 to 250° F.; softens at 225 to 235° F.; slow burning.	3 to 5% shrinkage at 165 to 175° F., 8 to 12% shrinkage at 212° F., softens at 240 to 250° F., melts at 255 to 280° F., slow burning.	4 to 8% shrinkage at 165° F., 10 to 15% at 212° F. Softens at 300 to 310° F., melts at 325 to 335° F.; slow burning.	Softens at 240 to 280° F. Self-extinguishing.		
cellent mineral	Good to excellent resistance to mineral acids.	Excellent resistance.	Good to excellent resistance to mineral acids.	Little effect even at high concentrations.	Excellent resistance even at high concentrations.	Good resistance to most mineral acids. Dissolves with at least partial decomposition by concentrated solutions of sulfuric acids.			Good resistance to most mineral acids and fair resistance to concentrated sulfuric acid.	Very resistant.	Very resistant.	Very resistant.	Fair resistance to concentrated sulfuric; excellent to others.		
sistance s.	Fair to good resistance to weak alkalis; moderate resistance to strong, cold solutions.	Fair. Resistant to weak alkali.	Fair to good resistance to weak alkalis.	Little effect even at high concentrations.	No effect on tenacity, some discoloration.	Good resistance to weak alkalis and moderate resistance to strong alkalis at room temperatures. Disintegrated by strong alkalis at boiling temperatures.			Good resistance to most alkali concentrations at room temperature. Disintegrated by strong alkalis at boil.	Very resistant with the exception of oxidative agents.	Very resistant with the exception of oxidative agents.	Very resistant with the exception of oxidative agents.	Unaffected by most with the exception of ammonium hydroxide.		
by oils, al salts, salts.	Good resistance to a wide range of chemicals.	Generally good resistance.	Generally good resistance.	Generally good resistance.	Not affected by most common chemical compounds.	Generally good resistance. Excellent resistance to bleaches and other oxidizing agents.			Not affected by most common chemicals. Good resistance to bleaches and other oxidizing agents.	Generally good resistance.	Generally good resistance.	Generally good resistance.	Generally good resistance.		
by com	Insoluble in common solvents such as benzene, petroleum ether, acetone, ethanol, carbon tetrachloride, etc.	Not affected by common solvents.	Unaffected by dry-cleaning solvents.	Softened by warm acetone and certain other ketones. Unaffected by dry-cleaning solvents.	Not affected by dry-cleaning solvents or most organic chemicals other than acrylic-type solvents. Dissolves in warm acetone.	Generally insoluble. Soluble in some phenolic compounds.			Not affected by most commercial solvents.	Swollen at room temperature by chlorinated hydrocarbons; soluble at 160° F. Insoluble in aliphatic alcohols, glycerine, ether, carbon disulfide, and acetone.	Generally same performance as the low-density type but less pronounced.	Generally same as linear polyethylene.	Not affected by alcohols or aromatic hydrocarbons, halogenated hydrocarbons, or ketones. Esters and ethers may be detrimental in varying degrees.		
se, acid nique), at and	Disperse, basic, neutral, premetallized, acid, chrome, and neutral dyes.	Wide range of colors with vat, naphthol, sulfur, aftertreated direct, and neutral premetallized dyes.	Excellent affinity for premetallized, chrome, direct, acid, acetate, and basic dyes. Limited affinity for vats, sulfur, and naphthols.	Acetate, acid, direct, cationic, premetallized, some vat.	Neutral dyeing premetallized, acetate and basic or cationic.	Disperse (acetate), developed (azoic), and cationic (for some types), with carrier, or at high temperatures.			Disperse (acetate) and developed (azoic) with carrier, or at high temperature.	Pigmented before extruding.	Pigmented before extruding.	Pigmented before extruding.	Colored by pigmentation during extrusion. Special dyes and procedures available.		
(Mate- ber may	Not attacked. (Material on the fiber may be attacked.)	Not attacked.	Excellent resistance.	Not attacked.	Not attacked.	Not attacked.			Not attacked.	Not attacked.	Not attacked.	Not attacked.	Not attacked.		
ns, leav- k bead. by gla- d, chloro- , or 88%	Burns, leaving hard, black bead. Generally round cross section. Insoluble in acetone, formic acid, 70% H_2SO_4, sodium hypochlorite. Soluble in dimethyl formamide.	Round cross section. Melts and burns, leaving hard, black bead. Dyed at room temperature for 3 mins. with 1% (owf.) Fastusol pink BBA Ex. Conc. (C.I.-353) in neutral bath. Other fibers left white or slightly stained.	Melts and burns, leaving a hard, black bead. Not affected by glacial acetic acid, chloroform, acetone, or 88% formic acid.	Staple has irregular ribbon-shaped cross section. Shrinks from flame to leave a hard, black, irregular bead. Self-extinguishing.	Turns reddish-brown but does not dissolve when placed in pyridine and heated.	Melts before burning. Soluble in hot metacresol but not soluble in acetone or concentrated formic acid.			Melts before burning. Insoluble in acetone, hydrochloric acid, sodium hypochlorite, and methylene chloride. Slightly soluble in 70% sulfuric acid and in 45% sodium hydroxide. Distinguishable from other polyesters by insolubility in a boiling mixture of one part hydrazine and nine parts butyl alcohol. Leaves no precipitate on cooling; other polyester fibers give yellow precipitate.	Melts at 230 to 250° F., depending upon molecular weight. Floats on water; insoluble in organic solvents at room temperatures; soluble in toluene, xylene, carbon tetrachloride at 160° F.	Melts at 255 to 280° F., depending upon molecular weight. Floats on water; soluble in aromatic solvents above 60° C.	Same as linear polyethylene except for higher melting point of 325 to 335° F. and is soluble in hot toluene.	Does not support combustion, but melts; insoluble in acetone; dissolves in dioxan at elevated temperatures.		
															

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CHART OF DAWBARN DLP® OLEFIN YARNS

Type Yarn	Standard Sizes	Package*	Major Use	Details of Use, Precautions, Suggestions
DLP®51 Polypropylene Outdoor Stabilized Monofilament	565/1/0 375/1/0 525F/1/0 1000F/1/0	3 lb. 3 lb. 1½ lb. 3 lb.	Fabric and Tape	Outdoor stability adequate for automobile seat covers and outdoor furniture. For enhanced properties, tenter at 280 to 300°F; resilience greatly improved. Finishing by calendering at 250°F generally required for a monofilament fabric. Saran monofilaments can *not* be used in combination; the tougher **DLP®51** cuts into and weakens the Saran in calendering. Chafing may be troublesome so that smooth guides and surfaces are suggested; lubricants may also be needed.
DLP®3 Polyethylene Ribbon Yarn	750R/1/0 1000R/1/0 1500R/1/0	3 lb. 3 lb. 3 lb.	Fabric	Outdoor stability adequate for seat covers. Use often depends on decorative or novelty effects in seat cover type fabrics. Used in grille cloth and shoe-belt-handbag fabrics, where **DLP®3** is a superior substitute for straw.
DLP®71 Polypropylene Ribbon Yarn	800R/1/0	3 lb.	Fabric	Expected to be used where greater heat resistance needed. Under test for outdoor stability.
DLP®61 Polypropylene Outdoor Stabilized Yarn	3000/16/MT	12 lb.	Rope	High tenacity for cordage but fabric uses possible. Strength in rope approaches nylon. Advantages are: floats on water; good dead load; good resiliency; good recovery; low stretch.
DLP®2 Polyethylene Monofilament	600/1/0	3 lb.	Rope	High tenacity. For rope and cordage only. Floats. Used where greater slipperiness and/or slower recovery are desirable.

***Disposable cardboard tube**

Comments on Some General Properties of Polypropylene Yarns

1. Color and Color Retention: All yarns are color-sealed and are available in a wide color range. Color retention is excellent: Only a few colors fade as much as slightly after 500 Fadeometer Hours; there is no darkening.

2. Strength Retention on Outdoor Exposure: Stabilizers are incorporated into the yarn—a must with polypropylene. **DLP®51** has been thoroughly use tested by seat cover service tests, several of which are over a year's duration, as well as extensive Weatherometer, Fadeometer, Arizona, and Florida test exposure.

3. High Modulus—a Cause of Trouble in Chair Tape: Unmodified polypropylene filament has a high modulus, i.e., it does not stretch much under load. Thus, unmodified **DLP®51** tape does not make as comfortable a chair as Saran; this property also contributes to tape fastener problems.

Recent DAWBARN Polypropylene Developments

1. Controlled Slub Yarn: Controlled slub polypropylene yarns have been made on a pilot scale. "Slubby" yarn production is anticipated in the fall and should be available in monofilament, ribbon, and multifilament yarns.

2. Multifilament Yarn: Multifilament yarns of 30 to 40 denier per filament have been in pilot production for half a year. Commercial production is expected in the fall.

3. Reduced Static Yarn: Following successful pilot production, treated **DLP®51** monofilaments with reduced static are expected to be in commercial production by fall. Anti-static lubricants have often been used to correct weaving difficulties, since polypropylene yarns, like most synthetic fibers, are highly susceptible to static charge.

Past DAWBARN Polypropylene Record

1. In commercial production of polypropylene yarn for rope **DLP®61** for considerably over a year and polypropylene monofilaments for fabric **DLP®51** over one year.

2. First to introduce, in late summer 1958, a UV stabilized polypropylene suitable for seat covers and outdoor furniture.

3. Offered the first pilot samples of polypropylene yarn to interested mills over two years ago and intensive development work has continued at an ever increasing pace. These rapid strides have been due in a large measure to Dawbarn's considerable experience in linear polyethylene yarn (the first high tenacity polyolefin yarn). Linear polyethylene work goes back nearly five years and commercial production for four years.

DAWBARN BROTHERS, INCORPORATED

WAYNESBORO, VIRGINIA

Telephone—WHitehall 2-8106

Regional Sales Offices:
128 3rd St. N.E., Hickory, N.C.
Telephone—DAvidson 7-4052

P. O. Box 513, Granby, Quebec, Canada
Telephone—FRontenac 2-2707

TABLE OF DU PONT FIBERS

Whatever the need, from the finest, most luxurious fibers for ready-to-wear, to the sturdiest, most practical fibers for industrial uses, there's a Du Pont fiber that will fill your requirements. On the following pages you will find helpful information about the types of Du Pont fibers and their adaptability to the expanding needs of the textile industry.

SAVE THIS TABLE

It will be useful to you as a handy reference in choosing the correct fiber for your particular need . . . from Du Pont's Family of Fibers.

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

Du Pont's family of fibers

A GUIDE TO HELP YOU CHOOSE THE BEST FIBERS TO FILL YOUR NEEDS

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*

NYLON

Nylon, the first commercially successful true synthetic is one of the most versatile of fibers. The applications are countless, from sheer hosiery to the toughest tire cord. The deniers, put-ups, lusters, filament counts and types are available in unprecedented varieties. In addition to the regular nylon yarns listed below are but a few of the many nylon yarns specifically engineered to fill a need:

TYPES 105, 200 AND 305 – Du Pont's new nylon yarn for improved fabric uniformity. Specific advantages that this yarn offer the weaver are elimination of pirn taper barre, improved dyeing uniformity, wider finished fabrics, improved yarn delivery and nonreturnable tube package.

TYPE 280 – New semidull luster nylon yarn for use in automotive and home upholstery fabrics. It offers improved dye lightfastness in addition to strength and durability.

DU PONT 501 CARPET NYLON – A textured, continuous-filament nylon yarn specially designed for use in carpets and associated products. In addition to the outstanding wear and ease-of-care properties already associated with carpets of 100% Du Pont Carpet Nylon, Du Pont 501 Carpet Nylon offers increased bulk and covering power, improved soiling characteristics, increased pill resistance, and new styling possibilities.

TYPE 707 – A new, improved nylon yarn specifically developed by Du Pont to meet the high performance requirements of the cordage industry. Currently available in a range of deniers from 840 to 15,120, Type 707 yarns give ropes made a new, high level of dry and wet strength as well as outstanding durability to repeat leadings under wet conditions.

DU PONT 420 NYLON STAPLE – Used for reinforcing cotton utility and underwear fabrics. Twenty-five per cent Du Pont 420 nylon (in warp yarns) has produced 70% longer wear life than than 100% cotton fabrics in tests of work clothing.

"ORLON"®

ACRYLIC FIBER

"Orlon"* acrylic fiber is noted for its soft, luxurious hand. Along with its warmth and appealing texture, the fiber offers strength, good abrasion resistance, is easy to care for, dries quickly, and is not weakened by mildew. This versatile fiber is available in a wide variety of types engineered to meet your specific needs. Today, the following types of "Orlon" are offered:

Staple and Tow designed for a wide range of products:

TYPE 42 – comes in a range of deniers from 1.0 to 10.0, in bright, semidull luster and color-sealed black, in regular and high shrinkage, in staple lengths of 1½ to 4½ inches. One denier comes in a total tow denier of 390,000. All other deniers are available in a total tow denier of 470,000.

Designed for specific spinning systems:

TYPE 25 – the newest addition to the family of "Orlon" acrylic staple is designed for blending with cotton or rayon. Three major property differences distinguish it from "Orlon" Type 42; namely, (1) lower fiber shrinkage, (2) significantly improved initial whiteness, (3) improved whiteness retention for the unbleached product. Type 25 is available in 2.5 denier, 1½" only.

TYPE 38 – produced only in tow form, 4.1 denier, semidull. This product can be dyed, stretched and cut to produce staple which will shrink as much as 38% when subjected to heat.

TYPE 39 – this product is designed for woolen system spinning and is a blend of deniers (aver. 4.2) with a variable cut length.

TYPE 39-A – this product is designed for woolen system spinning and is a blend of predominantly fine deniers (aver. 2.4) with a variable cut length.

TYPE 39-B – this product is designed for woolen system spinning and is a blend of heavy deniers (aver. 6.5) with a variable cut length.

*"Orlon" is Du Pont's registered trademark.

"DACRON"®

POLYESTER FIBER

"Dacron"* polyester fiber, because of its dimensional stability and springiness, is primarily responsible for the tremendous success of wash-and-wear apparel. Fabrics made with either 100% "Dacron" or blends of "Dacron" and other fibers have excellent wrinkle resistance, wear life and comfort – outstanding for men's suits, shirts and pajamas, and women's dresses, blouses, lingerie and nightwear. Its crispness, whiteness and sunlight resistance make it excellent for curtains, and the lively resilience of "Dacron" makes it perfect as a filling for pillows, comforters and sleeping bags. Industrial applications include power belting, filter cloth, sewing thread and hose. "Dacron" is available under the following designations:

Textile Yarns:

TYPE 55 – bright, normal-tenacity filament yarn.

TYPE 56 – semi-dull, normal-tenacity filament yarn.

TYPE 57 – dull, normal-tenacity filament yarn.

Standard Staple and Tow:

TYPE 54 – semi-dull staple and tow.

TYPE 61 – 45% shrinkage staple for industrial uses.

TYPE 64 – more dyeable, more pill-resistant staple for worsted and rayon blends.

Industrial Yarns:

TYPE 51 – bright, high-tenacity, low elongation filament yarn.

TYPE 52 – bright, high-tenacity, heavy-denier filament yarn.

FIBERFILL – "Dacron" polyester fiber for filling material.

FIBERFILL BATTING – "Dacron" polyester fiber for furniture padding.

FIBER BINDER – undrawn "Dacron" polyester fiber for binding non-woven fabrics.

Filament yarns are available in deniers ranging from 30 to 1,100, while staple is offered in deniers of 1.5 to 6.0, cut in lengths from 1¼" to 4½", and in tow form.

**"Dacron" is Du Pont's registered trademark.*

"ACELE"

ACETATE YARNS

"Acele"* acetate yarns provide glamour and beauty to the fashion world at relatively low cost. New packages, new deniers, new colors and new yarns are constantly being introduced in answer to the latest requirements of the textile industry. Deniers range from 40 to 3,000, while lusters include bright and dull. Packaged on tubes, beams and cones, "Acele" acetate yarns are supplied with zero twist, low twist, intermediate or regular twist. A myriad of color combinations is possible with the many color-sealed yarns offered.

In addition to regular yarns, three classes of specialty yarns are available. These include:

TYPE 20 – A filament yarn of bulked fiber make-up having improved cover and a drier hand than regular "Acele." 75 and 150 denier yarns are available for dresswear, casement and drapery fabrics. The heavier deniers, including 900, 1,800, and 2,700 are available for upholstery. Type 20 yarns are not available in color.

THICK AND THIN – A filament yarn of random flake spacing. These yarns are available in 100, 150 and 200 denier natural, black and color-sealed form for such end uses as blouse, dresswear casement and drapery fabrics.

TYPE C – A water-crimpable filament yarn available in 300 and 900 denier natural yarns only for such end uses as jacket linings and paint-roller covers.

**Du Pont's trademark for its acetate yarn.*

RAYON

Rayon is used now, and has been used successfully for years in lining fabrics, dresses, lingerie, upholstery, industrial hose, sewing thread and power belting. It continues to play an important role in the fashion and industrial world. In addition to regular textile yarns, fashion yarns by Du Pont include:

"ONDULE"*–A continuous-filament yarn characterized by randomly spaced, entangled slubs of irregular size and shape. This slubby, lustrous yarn has a very strong resemblance to Douppioni silk in both yarn and fabric form. Used extensively in dresswear, casement, drapery and sport-shirt fabrics, "Ondulé" is available in deniers ranging from 150 to 2,200.

NO. 7 THICK AND THIN – A continuous-filament yarn containing randomly spaced tapered flakes which simulate a Shantung silk effect or a spun-slub linen effect.

NO. 60 THICK AND THIN – A continuous-filament yarn characterized by short, rapidly repeating tapered flakes. End-use fabrics include upholstery, drapery, casements, grill cloths and shoe fabrics.

NO. 77 MONOFIL, CRINOFIL, TIN SELFIL – Characterized by filaments of flat cross section which provide varying degrees of crystal-like luster, high coverage and stiffness. It is used in dresswear, millinery and shoe fabrics.

"CIVONA"* – A hollow-filament fashion rayon yarn used in hats, draperies and dresswear.

Industrial fibers of "Super Cordura"† high tenacity rayon include:

TYPE 272 – Combines high strength, good fatigue life and improved wet strength to provide properties valuable to many industrial applications.

TYPE 272-F – Adhesive finished high tenacity rayon. It has the strength, modulus and good wet physical properties of Type 272, plus excellent adhesion in many GR-S, neoprene and natural rubber stocks.

**"Ondule", "Civona", are Du Pont's trademarks.*

†"Super Cordura" is a registered Du Pont trademark.

Du Pont's Family of Fibers is constantly changing to fit the needs of industry. For the latest information, call any of the these regional sales offices:

50 North Broadway
Rumford 16, R. I.
Phone: GEneva 4-6500

350 Fifth Avenue
New York City
Phone: LOngacre 3-6400

427 West Fourth Street
Charlotte, N. C.
Phone: Franklin 5-561

308 East Lancaster Avenue
Wynnewood, Pa.
Phone: TRinity 8-2700

Rubber Industry Sales
191 South Main Street
Akron 8, Ohio
Phone: HEmlock 4-6651

Additional technical information concerning Du Pont's fiber is published in the form of Technical Information Bulletins. A copy of the Index of Technical Information Bulletins is available upon request to:

Technical Service Section
Textile Fibers Department
E. I. du Pont de Nemours & Co. (Inc.)
Wilmington 98, Delaware

DU PONT
REG. U.S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*

CIRCLE 95 ON READER SERVICE CARD→

"to put the profit back into prosperity"

A POLICY OF SELECTIVE MARKETING

"Profitless Prosperity"—painfully familiar to many in the textile industry—involves huge movement of merchandise, with little or no return on the profit side of the ledger. The Creslan remedy is threefold: a new product of proven merit; a policy of selective marketing; an effective system of quality control and protection. Creslan acrylic fiber is the product. Born of a magic molecule, it combines the warmth, vitality and dyeability of the natural, with the wear-strength, easy care wrinkle-resistance that can be built into synthetics. Creslan comes to market selectively. It is sold only through prestige spinners, weavers, knitters; merchandised through the great manufacturer brand names; promoted through America's top retail outlets. Supporting the integrity of selective marketing is a program of quality control noteworthy for strength and workability. The Creslan trademark is authorized for use only on finished fabrics tested and approved by Cyanamid. It is not authorized for use on products such as top, yarn, or greige goods. The Creslan trademark becomes its own symbol of quality, associated with selected outlets throughout every phase of finished goods merchandising. Creslan selling policies are original, imaginative and practical. They have been developed with one thought in mind: we want you to make money. Creslan is a product of American Cyanamid Company, New York

CYANAMID

born of a magic molecule...

Creslan®

ACRYLIC FIBER

NOW a whole new with cotton

It is now possible for you to produce without modification of your present equipment wash 'n' wear fabrics of superior properties.

Why? Because there is a new fiber of super strength rayon available. It is AVRON rayon.

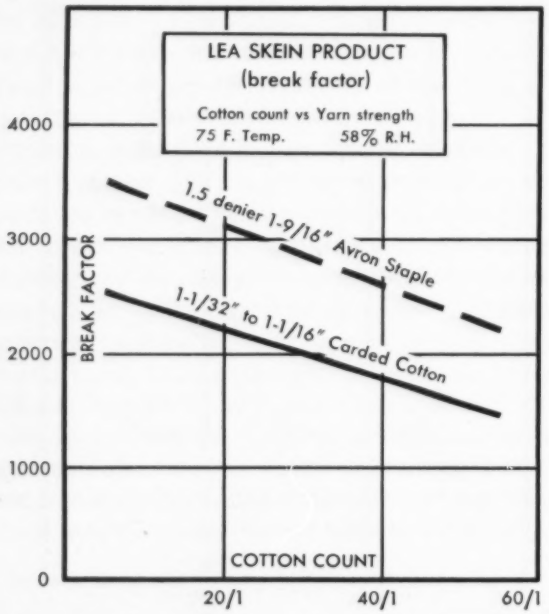
The new fiber excels cotton for single fiber tensile strength in the conditioned state, approximates it for the same property when wet. AVRON is not degraded to the same extent as cotton, by resin finishing and, added to cotton it imparts a soft hand unattainable with cotton alone.

NO CHANGE IN TECHNIQUES NECESSARY. Avron rayon may be worked through the cotton system without any modification of equipment. Because of superior tensile strength, spinning and weaving efficiency is higher for Avron rayon than for cotton. And in any drawing frame blend with cotton, less waste means a cost saving.

EASE OF DYEING. Avron dyes to any shade easily without changing your techniques. In fact, it has a greater affinity for dye than cotton.

LIGHTER FABRICS FOR SAME STRENGTH. Because of the strength of AVRON fibers you can turn out lighter wash 'n' wear fabrics of the same strength as cotton, and a more even fabric because of the uniformity of AVRON yarn. Also, standard weight cotton constructions can be made with 75 to 100% greater tensile strength and tear strength.

PROPERTIES OF AVRON FIBER OF SPECIAL IMPORTANCE TO THE MILL . . .



Stress Strain	100% Cotton	100% AVRON
Single Fiber Tensile (grams per denier)		
Conditioned	3.65	4.07
Wet	4.20	2.96
Single Fiber Extensibility		
Conditioned	10.0	30.2
Wet	13.0	37.0
Moisture Regain, Adsorption	7%	12%

COMPARISON OF YARN PROPERTIES

	Cotton*	AVRON
Yarn Count (Cotton System)	30/1	30/1
Turns/Inch	24.0	16.5
Lea Skein—Strength (lbs.)	72	100
Product	2170	3000
Single End—Strength (ozs.)		
Conditioned	10.2	13.9
Wet	11.8	9.7
Single End—Product		
Conditioned	307	418
Wet	354	290
Single End—Extensibility		
Conditioned	6.1	20.0
Wet	9.3	24.0

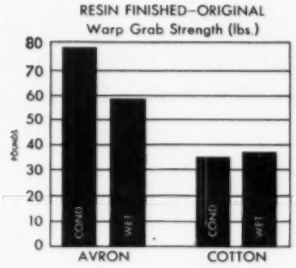
**1-1/32" to 1-1/16" Carded Cotton*

(Finer count yarns can obviously be made from AVRON fibers)

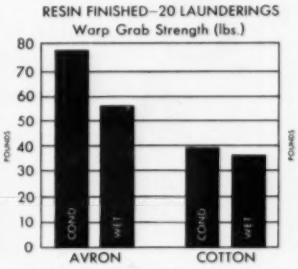
approach to wash 'n' wear fabrics warp and **AVRON*** rayon filling
high strength

COMPARISON OF AVRON AND COTTON IN FINISHED FABRICS

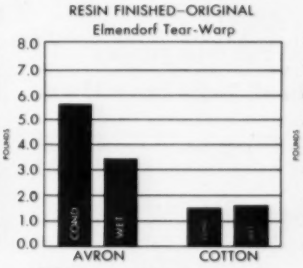
The following charts clearly demonstrate the superiority of AVRON over cotton. Fabrics were tested before and after 20 home-type launderings at 140° F.



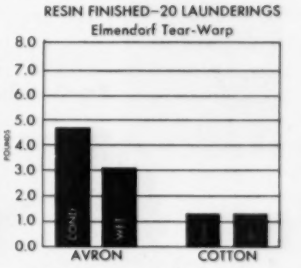
AVRON is about 123% stronger conditioned, about 60% stronger wet than cotton fabrics.



AVRON is 97% stronger conditioned, about 53% stronger wet than cotton fabrics.



AVRON is 273% more resistant to tear conditioned, 106% stronger wet than cotton.



AVRON is 262% stronger conditioned, 138% stronger wet.

HOW COMMERCIALLY-PRODUCED AVRON FABRICS COMPARE WITH MINIMUM REQUIREMENTS FOR WASH 'N' WEAR FABRICS, STATED BY NATIONAL ASSOCIATION OF SHIRT, PAJAMA, AND SPORT SHIRT MANUFACTURERS

	136 X 60 COMBED BROADCLOTH			100 X 58 CARDED BROADCLOTH		
	Required	Cotton Warp AVRON* filling	% Improvement	Required	Cotton Warp AVRON* filling	% Improvement
Filling tensile strength	25 lbs.	44 lbs.	76%	25 lbs.	40 lbs.	60%
Filling tear strength	450 gm	1600 gm	256%	450 gm	1600 gm	256%
Wrinkle recovery	220	250	14%	220	250	14%
Wash-wear rating	3.0-5.0	3.0-5.0	—	3.0-5.0	3.0-5.0	—

*Trademark American Viscose Corporation

For additional information about AVRON fibers and fabrics write directly to AMERICAN VISCOSE CORPORATION, 350 FIFTH AVENUE, NEW YORK 1, N. Y.

AVISCO®

Rayon • Acetate • Cellophane

CHEMSTRAND
CHEMICAL TEXTILE FIBERS
Technical Information

TECHNICAL SALES SERVICE DEPARTMENT THE CHEMSTRAND CORPORATION PENSACOLA, FLORIDA

JANUARY 1959

SLASHING PRODUCER TWIST NYLON BY THE "CHEMSIZE" METHOD*

CHEMSTRAND
CHEMICAL TEXTILE FIBERS
Technical Information

TECHNICAL SALES SERVICE DEPARTMENT THE CHEMSTRAND CORPORATION DECATUR, ALABAMA

JUNE, 1959

ADDENDUM TO BULLETIN NO. DF11

ANTISTATIC FINISHES FOR ACRILAN* FABRICS

Please detach the gummed label bearing addendum to Bulletin No. DF11, "Antistatic Finishes For Acrilan* Fabrics", and attach it to the bottom of page 1.

Note: In cases where the dyeings will not

CHEMSTRAND
CHEMICAL TEXTILE FIBERS
Technical Information

DYEING & FINISHING SERVICE THE CHEMSTRAND CORPORATION DECATUR, ALABAMA

JULY, 1959

THE PRINTING OF ACRILAN* AND ITS BLENDS

CHEMSTRAND
CHEMICAL TEXTILE FIBERS
Technical Information

CONSUMER PRODUCTS SERVICE THE CHEMSTRAND CORPORATION 350 FIFTH AVENUE NEW YORK 1, NEW YORK

MAY 1959

THE "CHEMPLEAT" PROCESS* A New Concept in Pleating Thermoplastic Fabrics

CHEMSTRAND
CHEMICAL TEXTILE FIBERS
Technical Information

TECHNICAL SALES SERVICE DEPARTMENT THE CHEMSTRAND CORPORATION PENSACOLA, FLORIDA

MAY 1959

TEXTURED YARNS OF CHEMSTRAND* NYLON

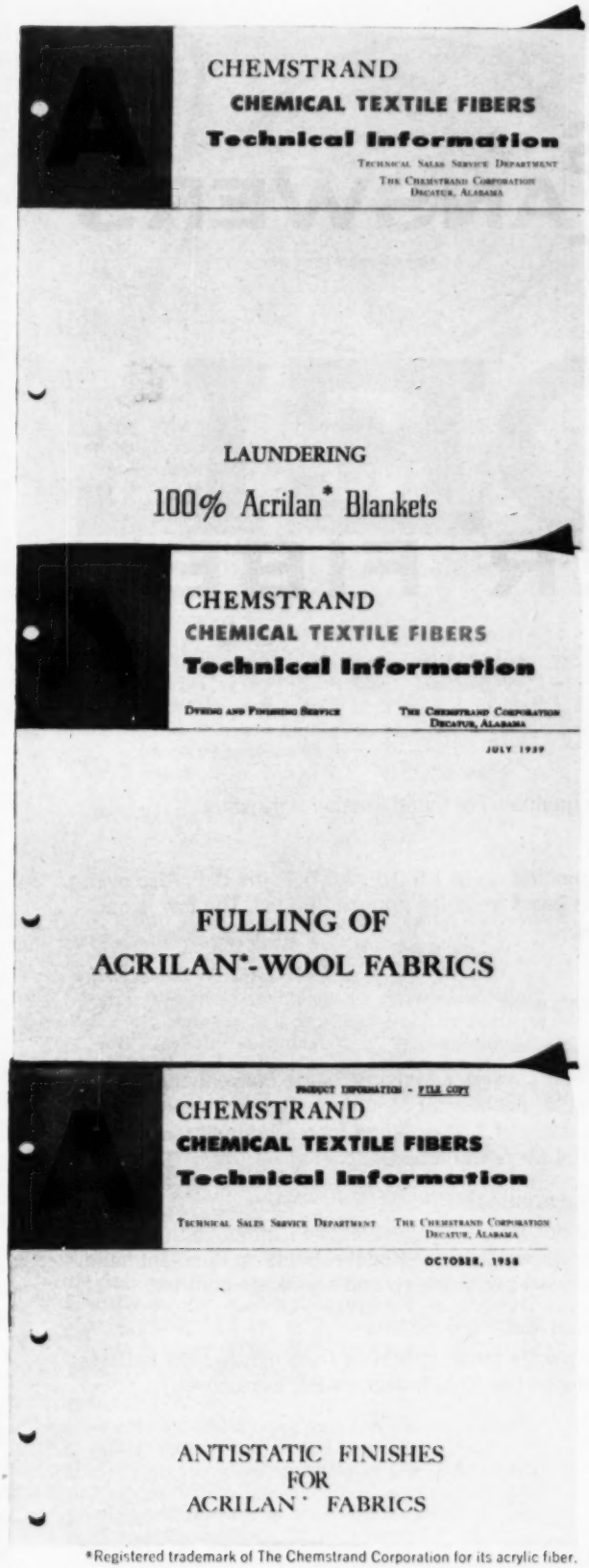
CHEMSTRAND
CHEMICAL TEXTILE FIBERS
Technical Information

TECHNICAL SALES SERVICE DEPARTMENT THE CHEMSTRAND CORPORATION DECATUR, ALABAMA

JULY, 1959

THE MANUFACTURE AND PERFORMANCE CHARACTERISTICS OF ACRILAN* CARPET

THE CHEMSTRAND CORPORATION • GENERAL SALES OFFICES: 350 FIFTH AVENUE, NEW YORK 1, N. Y.
DISTRICT SALES OFFICES: 350 Fifth Avenue, New York 1; 3½ Overwood Road, Akron, Ohio; 197 First Ave., Needham Heights, Mass.; 129 West Trade St., Charlotte, N. C.; California Office: 707 South Hill St.,



The fiber charts at the beginning of this section give you a good general idea of Acrilan® and Chemstrand® nylon. But because Acrilan has revolutionized so many aspects of apparel and home furnishings, because Chemstrand quality nylon is taking such an important place as the superb product of a wholly unified plant, you need more specific information to take full advantage of these fibers. Here is an example of the complete technical data available to you. Just get in touch with your regional sales office, or The Chemstrand Corporation, Dept. TVS, 350 Fifth Ave., New York City.

*Registered trademark of The Chemstrand Corporation for its acrylic fiber. Chemstrand makes only the fiber; America's finest mills and manufacturers do the rest.

Los Angeles 14 • Canadian Agency: Fawcett & Co., 34 High Park Blvd., Toronto, Canada PLANTS: ACRILAN® ACRYLIC FIBER—Decatur, Ala.; CHEMSTRAND® NYLON—Pensacola, Fla.

QUESTIONS AND ANSWERS ABOUT EASTMAN KODEL® POLYESTER FIBER

Q: What is Kodel?

A: It is a polyester fiber, possessing unique qualities not found in other polyesters.

Q: In what forms is it available?

A: In various lengths to suit the system of spinning . . . in 1.5 D/F, 3.0 D/F, 4.5 D/F. Also available in tow form. The fiber is packaged in bales weighing approx. 350 lbs. The tow is packaged in boxes weighing approx. 150 lbs.

Q: What are its main uses?

A: Most types of men's, women's and children's wear.

Q: Can Kodel run on all spinning systems?

A: Yes, including cotton, worsted, woolen and converter systems, using conventional equipment without major changes in processing or mechanical conditions. Due to its low specific gravity of 1.22 as compared to other polyesters of 1.35-1.38, an increased bulk factor must be considered in determining lap sizes, fabric construction, etc.

Q: What about bleaching, dyeing, finishing and printing?

A: Kodel is dyed and finished similar to other polyesters. Can be bleached, although the fiber is very white. Chemical finishing is usually unnecessary since Kodel exhibits an excellent hand, and is high in wrinkle recovery, wash-and-wear performance and shrinkage control.

Q: What fiber constructions is Kodel best suited for?

A: Kodel has been successfully used to style a wide range of fabrics from light-weight batistes to heavy flannels. It has high heat resistance (up to 425 degrees F.), extra covering power and outstanding resistance to pilling.

Kodel is the trademark for Eastman polyester fiber

EASTMAN CHEMICAL PRODUCTS, INC., SUBSIDIARY OF EASTMAN KODAK COMPANY, 260 MADISON AVENUE, NEW YORK 16, NEW YORK

Vycron*

POLYESTER FIBER

SPECIFICATIONS
FOR YOUR PERMANENT FILE

VYCRON *Specifications*

FIBER STRUCTURE:
Vycron is a polyester fiber differing from other polyesters in its total chemical constitution and its basic structure. Its structure is designed to give better dyeing properties along with good fiber processing and wearing characteristics.

FIBER PROPERTIES:

	Vycron Staple Fiber
Tensile Strength	*5.6 g/d*
Break Elongation	*35%*
Modulus of Elasticity	*0.5 g/d/%*
Resilience as measured by work recovery	
from 2% extension	*93*
from 5% extension	*44*
from 10% extension	*33*
Toughness	*1.75 gm. cm./ cm. den.*
Moisture Absorption	*0.6%*
Specific Gravity	*1.36*

HEAT RESISTANCE:
The heat resistance of Vycron Fiber is good. Melting point is 455°F. Fabrics of Vycron may be ironed safely at temperatures as high as 350°F.

RESISTANCE TO CHEMICALS:
Vycron has good resistance to common solvents and cleaning agents. It is not affected by acids or alkalis normally encountered by apparel fabrics.

RESISTANCE TO WEATHERING:
Good.

FLAMMABILITY:
Vycron will burn slowly but melts and drops off when hanging free.

MILL PROCESSING:
Vycron Fiber can be processed excellently on standard spinning systems. The Fiber has extremely good fiber to fiber cohesion and is exceptionally strong. Yarns spun from it are stronger than yarns spun from other polyesters. Even fine counts perform excellently because of the extra strength and evenness.

DYEABILITY:
The affinity and dyeing rate of Vycron for dispersible acetate colors and developed azoics is slightly greater than for some of the competitive polyesters. When selected dyes are properly applied, good fastness is achieved. Laboratory tests confirmed by commercial runs evidence excellent colorfastness to laundering, hot pressing, hot wet pressing, sublimation, perspiration, gas fading, solvent rubbing, light, and crocking wet and dry.

DIMENSIONAL STABILITY:
To produce a fabric with good dimensional stability, heat setting is necessary. In fabrics where the blend contains a high percentage of rayon or cotton, thermosetting resins or compressive shinking may be necessary.
Heat setting temperatures and equipment suitable vary, depending on the particular fabric. Generally we recommend somewhat lower heat setting temperatures than for other polyesters. A maximum of 365° for 45 seconds has been found adequate.

WASH & WEAR PERFORMANCE:
Vycron fabrics and fabrics made with proper blends of other fibers show remarkable wrinkle resistance and crease retention after wash and wear tests.

PILLING:
Vycron has outstanding resistance to pilling. Even though its strength is high, its basic physical structure is such that pilling does not normally occur.

BLEND LEVELS:
Blends are permitted with Cotton or other synthetics as long as the minimum Vycron is 50% of the total blend.

VYCRON POLYESTER FIBER is now being produced in the following forms:

STAPLE in 1½ and 3 denier, for apparel and industrial fabrics.

SPECIAL PROCESS YARNS Vycron filament yarn, combined with other yarns such as Bemberg® or viscose rayons, for unusual surface interest in apparel and decorative fabrics.

TOW for Pacific Converters in 1½ and 3 denier for apparel and industrial fabrics.

TOW for Direct Spinners . . . to be spun into yarns for blouses, skirts, underwear, dresses, suits, shirts, rainwear and industrial fabrics.

CONTINUOUS FILAMENT YARNS 420 denier and greater, in 1½ and 3 denier per filament.

VYCRON is America's only polyester fiber tested, quality-controlled, and certified under a regular program by the U. S. Testing Company.

BEAUNIT MILLS, Inc.
Fibers Division
261 Fifth Avenue, New York 16, N. Y.

*Registration applied for

Excitingly DIFFERENT FABRICS

. . . created with new

TASLAN*

INTERTEXTURED YARNS

by

BRANSON

TASLAN* Intertextured Yarns by **BRANSON** are used for:

Suiting and Shirting	**Sweaters**
Coats and Sport Coats	**Rugs and Carpets**
Upholstery and Drapery Fabrics	**Towels**
	Blankets
Automobile Upholstery	**Swimwear**

. . . and other knitted and woven fabrics where hand, texture, and effect are important.

*REGISTERED DUPONT TRADE MARK

Fabric woven by Craftex Mills, Inc.

NEW . . . and excitingly different . . . are the fabric creations made with TASLAN* Intertextured Yarns by Branson.

These soft, core-bulked yarns bring to fabrics a new elegance in hand and texture, yet they are abrasion-resistant, non-pilling, and long-wearing.

TASLAN* Intertextured Yarns by Branson permit weavers and knitters to produce an almost infinite variety of decorative and novelty effects, patterns, and colors . . . as well as thick, thin, even, or random spacing.

Because of their greater coverage, these yarns mean savings in the manufacturing process.

TASLAN* Intertextured Yarns by Branson, whether core-bulked Nylon, Dacron, Rayon, Acetate, Arnel, Orlon, or Wool, may be used as a body or decorative yarn, in warp, and for filling. (In warp , no sizing is necessary — special processing eliminates dye-streaking.)

Create new . . . different . . . EXCITING fabrics — use TASLAN* Intertextured Yarns by Branson!

Branson Company

1808 LIBERTY LIFE BLDG. • CHARLOTTE, N. C.

PLANT: MONROE, N. C. 4034

CHICAGO: William Napier, 3555 Peterson Ave. • **JENKINTOWN, PA.:** William A. Popp & Associates, Inc., The Benson-East • **NEW YORK:** Robert Napier, 51 E. 42nd Street

Firestone

PRIME SOURCE FOR TOP-QUALITY MAN-MADE FIBERS

Trade name	Velon	Velon LP	Velon PS	Velon NF
Generic name	**Saran**	**Polyolefin**	**Polyolefin**	**Nylon**
Chemical type	Vinylidene chloride monofilament	Linear Polyethylene	Polypropylene	Nylon 6 Monofilament
Typical uses	Automobile seat covers Furniture fabrics Screening Tapes Drapes and hangings Agricultural shade cloth Shoe mesh fabrics Summer furniture webbing Belting Novelties Tow for flocking Rope identification	Automobile seat covers Furniture fabrics Summer furniture webbing Tapes Shoe mesh fabrics Marine rope Novelties	Scouring pads Filters Upholstery yarn Marine rope Summer furniture webbing	Textile machine tapes Conveyor belts Ropes and cables Tire chafer fabrics Crinoline fabrics Filter screens Brush bristles Burial fabrics Sieving screens Dye and laundry bags Fishing nets
Heat resistance	May shrink above 160° F Softens at 240° - 280° F	Melts at 260° - 280° F	Melts at 325° - 335° F	May discolor and weaken after 5 hrs. at 150° C
Softening point	240° - 280° F	250°F	280° - 300° F	400° - 420° F
Electrical properties	Excellent	Excellent	Excellent	Fair
Effect of ordinary aging	Slight	Slight to none	Slight to none	None
Fade resistance	May darken on prolonged exposure	Excellent fade resistance	Excellent	Equal to cotton, linen—better than silk and dull rayon
Color possibilities	Wide Range	Wide Range	Wide Range	Wide Range
Clarity	Translucent to opaque	Translucent to opaque	Translucent to opaque	
Flammability	Self-extinguishing	Low burning rate after flame is removed	Continues to burn	Does not support flame
Nominal gauges	.005″ to .030″ Heavier gauges to order	.008″ to .020″ (round) .008″ x .020″ to .013″ x .030″ (elliptical)	.008″ to .020″ (round) .008″ x .020″ to .013″ x .030″ (elliptical)	.005″ to .020″
Yards per pound (avg.)	24,000 to 645	16,450 to 2,550 (round) 7,970 to 2,800 (elliptical)	17,000 to 2,720 (round) 8,500 to 2,990 (elliptical)	34,360 to 2,150
Other characteristics	Excellent chemical resistance Extremely resistant to molds and fungi Easy to clean Resistant to weathering	Good abrasion resistance, generally unharmed by acids and alkalies. Extremely resistant to molds and fungi. Prolonged U.V. exposure may cause loss of elongation and tensile strength.	Generally resistant to acidic and alkaline solutions. Prolonged U.V. exposure may cause loss of elongation and tensile strength.	Excellent abrasion and chemical resistance, excellent strength. Mildew and fungus resistant. Prolonged U.V. exposure may cause loss of elongation and tensile strength.

SKILLFUL TECHNICAL HELP AVAILABLE TO YOU

Firestone offers you far more than prompt delivery of top-quality fibers according to your exact requirements. Ready to work for you is a complete and experienced engineering service. You can have products, colors and other specifications pre-tested—Firestone is glad to give you dependable help in many ways. Write today for more details. No obligation, of course.

FIRESTONE PLASTICS COMPANY, Pottstown, Pa.

HERE'S MORE INFORMATION ABOUT *DARVAN

Darvan is *different*. It is a nytril fiber—an entirely new composition of matter. It offers a combination of properties that give it end use versatility previously not available. Here they are:

Wool-like resilience
Outstanding washability
Natural bulk
Excellent wrinkle recovery
Softness

"Darvan" knitwear retains its shape, elasticity and excellent hand throughout the life of the garment—unaffected by washings and dryings regardless of temperature.

"Darvan" in woven fabrics adds unexcelled softness of hand and resilience to the performance which buyers have come to expect from the finest man-made fibers.

"Darvan" deep-pile fabrics have incomparable touch and appearance plus outstanding performance.

Darvan processes well on the common systems—woolen, worsted and cotton—staple and tow-to-top—100% or in blends. Darvan can be bleached, stock-dyed, piece-dyed or skein-dyed in a full range of colors.

For more detailed information about Darvan nytril fiber, write or call B.F.Goodrich Chemical Company, 3135 Euclid Ave., Cleveland 15, Ohio.

DARVAN
NYTRIL FIBER

*Reg. T.M. for nytril fiber of B.F.Goodrich Chemical Company.

Metlon makes everything look better!

Many fine weavers are using Metlon in combination with these new fibers for their important new constructions.

AMERICAN VISCOSE Avron® high strength rayon with **Metlon**

A staple yarn 40% stronger dry and 70% stronger wet than ordinary viscose rayon; for finer yarn counts used in light weight apparel and home furnishings fabrics.
®Trademark

BEMBERG Rayon with **Metlon**

A heavy, straight, two tone full 900 denier filament yarn producing particularly effective tweed effects in quality fabrics of many types.

CELANESE® Celaire® with **Metlon**

Acetate staple fiber yarn, blended with other fibers for increased abrasion resistance; licensed for floor coverings, upholstery, slipcover and other fabrics.

CHEMSTRAND Acrilan® with **Metlon**

Carpet yarns spun from Chemstrand's acrylic fiber, franchised under rigid supervision to manufacturers of superior quality carpets.

COURTAULDS® Coloray® with **Metlon**

Captive color, solution-dyed viscose rayon staple yarn for all types of fabrics; no fading after 500 hours of exposure to Florida sun.

DU PONT Ondule* with **Metlon**

Random slub rayon yarn used in a wide variety of casement and drapery fabrics; for interesting texture and color.
*DuPont's trademark for its random slubbed rayon fashion yarns

EASTMAN Chromspun® with **Metlon**

Shantung novelty yarn of cellulose acetate, color locked by solution dyeing, spun by Eastman Chemical Products Inc., highly effective in tweed fabrics.

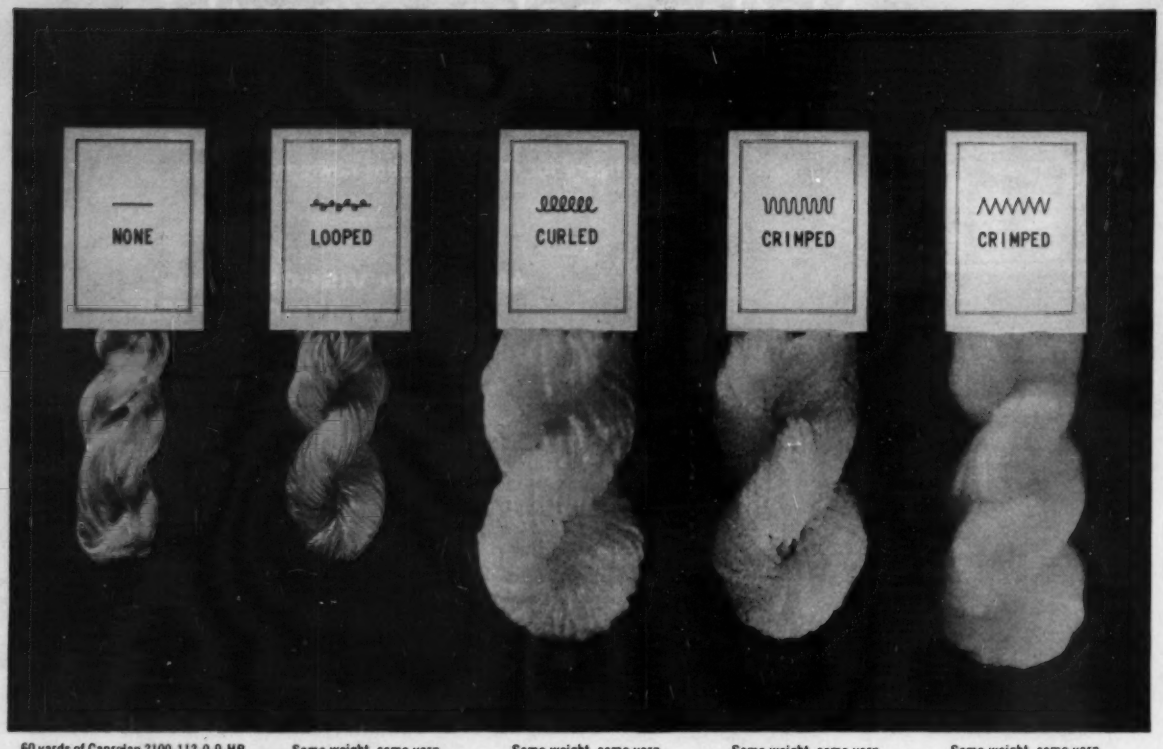
ENKA Skyloft® with **Metlon**

Solution-dyed, bulked, 2200 denier filament rayon carpet yarn, by American Enka Corporation; spun then lofted in steam jet for greater body and resilience.

METLON® with MYLAR* METALLIC YARNS

*DuPont's Polyester Film

For detailed information, write to METLON CORPORATION, 432 Fourth Avenue, New York 16, New York • A Subsidiary of Acme Backing Corporation



60 yards of Caprolan 2100-112-0-0-HB heavy yarn which has not been textured. Same weight, same yarn textured by looping. Same weight, same yarn textured by curling. Same weight, same yarn crimped by one process. Same weight, same yarn crimped by second method.

Textured filament nylon?... What a Difference Caprolan* Makes!

Take a Look at How Caprolan Responds to Four Popular Bulking Processes!

The left-hand skein is simply 60 yards of our 2100-112-0-0-HB heavy yarn which *has not* been textured by *any* method. To its right are four skeins of the same weight of the same yarn bulked by looping, curling and two methods of crimping.

These textured yarns of Caprolan tell their own story!

If you are a producer of carpets, upholstery fabrics, decorative textiles, industrial fabrics or military goods, textured filament yarns of Caprolan open a whole new world of fabric engineering and design opportunities for you. Used alone, or in combination with each other, textured yarns should hold a high priority in your future fabric plans.

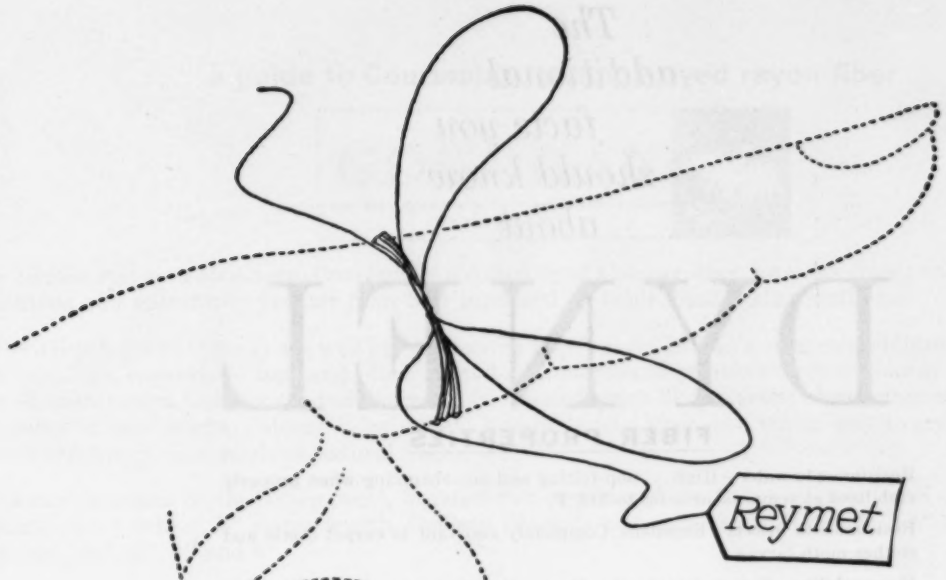
When ordering textured filament nylon yarns, specify Caprolan, which has all the advantages of nylon plus a number of extra, important performance values!

For further information, technical assistance or list of sources, write us today.

TEXTURED
caprolan®
THE NYLON FIBER BY ALLIED CHEMICAL

Fiber Sales and Service Allied Chemical *National Aniline Division*
261 Madison Avenue, New York City 16, N. Y.

*Registered Trade Mark for Allied Chemical's Polyamide Fiber.



Colorful Reminder!

Enhance any décor

with the tasteful use of

Reynolds REYMET*

Aluminum Yarn

Add a dash of sparkling color to dull or monotone areas . . . not only rugs, draperies, upholstery—but even wall surfaces! We'll be glad to leave you samples to tie around your forefinger . . . and to tell you about new ideas now working.

For a dependable source of dependable quality in Reymet staple and Reymet continuous filament with Mylar—full palette of colors—call BARNHARDT BROS. CO., Charlotte, N. C., sales agents for the Southeast U. S. A. For Canada, W. J. Westaway, Ltd., Hamilton, Ont. and Montreal, Que. Or write to Reynolds Metals Company, Richmond 18, Virginia.**

*Trade mark registered. **Du Pont trade mark for its polyester film

BEGINNING OCTOBER! See Reynolds shows—James Michener's "ADVENTURES IN PARADISE" Monday nights and "ALL STAR GOLF" every Saturday ABC-TV Network.

The additional facts you should know about

DYNEL

FIBER PROPERTIES

Resistance to water – High . . . non-felting and non-shrinking when properly stabilized at temperatures up to 212°F.

Resistance to insects – Excellent. Completely resistant to carpet beetle and clothes moth larvae.

Flammability – Fire-resistant; the fiber will not support combustion.

Electrical Properties – High dielectric strength; resistivity greater than 10^8 megohm-cm.

Effect of Age – Practically none.

WHAT DYNEL'S PROPERTIES MEAN IN FABRICS

In Blends – DYNEL makes it possible to produce fabrics with a wide range of usefulness. For example: Blended with wool – DYNEL makes strong fabrics that hold their shape and press. Washable blends with only 30% Dynel are possible in many constructions.

Blended with rayon – DYNEL imparts to a wide variety of textures improved shape and press retention for easy care.

Blended with cotton – DYNEL helps the fabric keep its loft, and therefore its softness and warmth, even after long use and repeated launderings.

Warmth and A Good Hand – DYNEL fabrics feel warm and friendly to the skin. Tests comparing napped DYNEL fabric with comparable weight, construction and thickness of natural fibers indicate that DYNEL rates with the best for both warmth and compressional resilience.

Long Service Under Adverse Conditions (Chemicals, Mildew, Fungus, Insects) – DYNEL has a high degree of resistance to a wide variety of inorganic acids, bases and salts. It is unaffected by most industrial chemicals. DYNEL fabrics are also immune to attack by insects, mildew or fungus.

Easy Heat Shaping and Heat Setting – Use heat to shape woven, knit, non-woven or deep pile DYNEL fabrics for brand new apparel, decorative and industrial uses. DYNEL fabrics may be drawn, molded or embossed by widely used plastics fabricating methods using simple heating, shaping and cooling procedures. And heat-set DYNEL delivers outstanding stability.

Fire Resistance – DYNEL will not support combustion. In contact with an open flame the fiber will burn, but stops burning when the flame is removed. A variety of fabrics made of 100% DYNEL pass the ASTM Test D 626-41 T for flame-retarded textiles, but, because some dyestuffs and finishing processes contribute to flammability, all fabrics must be tested before such claims are made.

Easy Laundering – Quick Drying – DYNEL fibers are non-felting and shrink less than 3% in boiling water. These properties, coupled with high-resistance to chemical attack and high wet strength, make possible repeated laundering even with strong detergents under vigorous conditions. The moisture regain of DYNEL is less than 0.4 per cent at 70°F. and 65 per cent relative humidity. This resistance to water makes DYNEL one of the fastest drying fibers.

For additional information, call or write us today.

DYNEL • A UNION CARBIDE BRAND TEXTILE FIBER

Textile Fibers Department, Union Carbide Chemicals Company, Division of Union Carbide Corporation, 100 E. 42nd St., New York 17, N. Y.
Offices in Boston, Mass. at 300 First Ave., Needham Heights; Charlotte, N. C. at 1213 Liberty Life Bldg.; Montreal, Que.; Toronto, Ont.

"Union Carbide" is a registered trademark of Union Carbide Corporation

a guide to Courtaulds' solution-dyed rayon fiber

A viscose staple in structure, Courtaulds' solution-dyed Coloray fiber contains color: color of a fastness, richness and uniformity greater than that produced by traditional dyeing methods.

The advantages of Coloray are well known, having been proven in men's, women's, children's apparel, home furnishings, convertible tops and other items too numerous to mention. Today, Coloray fiber is available in 27 basic colors. Coloray colored fibers can be blended much like an artist blends pigments, to create any number of new colors. Coloray is extremely blendable as a fiber, is a better way to create fabrics made with synthetics, man-made or natural fibers.

Coloray processes on the cotton, wool, worsted, flax or silk system. It is available in 1½ denier, 1⅜ staple length and 3 denier, 2″ staple length. Coloray Black is also supplied in 3 denier, 1⅛″ and 1⅜″ and 5½ denier, 1⅜″, 2″, 3″ and 6″.

FASTNESS PROPERTIES OF COLORAY AS PROVEN IN RIGOROUS TESTS

1. FASTNESS TO LIGHT

Most Coloray colors including pastels showed no signs of fading after 500 hours of exposure to direct tropical sunlight. This is fastness 6 times better than L6, when measured by the AATCC standard for color-fastness.

2. FASTNESS TO WASHING

Subjected to AATCC tests for severe washing in commercial or home washing machines, and in temperatures of 180°F, specimen Coloray colors did not fade, streak or run. Classified, Class 5, highest possible rating.

3. FASTNESS TO PRESSURE-COOKING

Coloray fabrics were boiled under steam pressure of 15 pounds for 15 minutes. Comparisons with untested control fabric showed no change of color even under these harsh conditions.

4. FASTNESS TO HOME BLEACHES

Fabric of Coloray was soaked in a home bleach without any perceptible loss of color.

5. FASTNESS TO PERSPIRATION

Tested according to AATCC procedures in alkaline and acid perspiration solutions at fixed mechanical pressure, Coloray colors rated Class 5, on two counts: extreme fastness of Coloray cloth, no staining of white cloth tested along with it.

6. FASTNESS TO DRY CLEANING

After the equivalent of 8 dry cleaning cycles in cleaning fluid 50 times the weight of the test sample no appreciable difference in color. Rated Class 5, AATCC procedures.

7. FASTNESS TO CROCKING AND SEA WATER

Excellent rating to dry crocking, good to excellent rating to wet crocking. All Coloray shades found fast to sea water and chlorinated pool water.

8. FASTNESS TO FINISHES

Aqueous solutions like shower-proofing, silicone-proofing and permanent finishes for softness and crispness, do not affect Coloray colors. Rubber coatings and bondings must be handled with special care to avert bleeding. Generally, Coloray fibers will accept any finish including finishes for resistance to every danger from moths to radiation, without change of color.

Expert guidance in every phase of processing Coloray is available upon request. Contact the Fiber Development Department, Courtaulds (Alabama) Inc.: *first in man-made fibers, first in cross-linking, first in solution-dyeing*, 600 Fifth Avenue, N. Y. 20–Greensboro, N. C.–LeMoyne Plant, Mobile, Ala.

a guide to Courtaulds' totally new cross-linked rayon fibers

CORVAL™ and TOPEL®

Corval and Topel are the newest products of Courtaulds' fiber research and development. Basically, they are cellulose, but they differ from traditional rayon both in structure and behavior. The reason is a chemical process of cross-linking that controls the molecules of the fiber structure, tying them together, minimizing the spaces in between.

The result is a new form of fiber with rayon's easy dye-ability and versatility plus definite advantages over rayon: for example, improved dimensional stability and quicker drying, which are excellent qualities for wash-and-wear. The molecular structure of cross-linked Corval and Topel makes for a fine, even yarn, which in turn produces a richer-looking weave in fabric. In addition, Corval and Topel offer the natural fibers' warmth, vitality and feeling of comfort and luxury. This is true of pure 100% Corval and Topel, as well as blends with other fibers.

See the outline below for specifics on Corval and Topel, Courtaulds' new fibers for men's, women's and children's apparel and home furnishings.

JOINT PROPERTIES OF CORVAL AND TOPEL

1. Processes efficiently on conventional cotton-rayon, woolen and worsted equipment.
2. Water absorption and swelling comparable to cotton's.
3. Higher wet initial modulus than viscose rayon.
4. Improved dimensional stability to laundering.
5. Dry strength comparable to medium tenacity viscose rayon staple, but higher wet strength.
6. Resistance to alkalis, enabling caustic treatments to be performed.
7. May be dyed with all the normal dyestuffs used for cellulosic fibers.
8. Can be resin-treated to obtain good wrinkle-resistance and finish for different types of performance.
9. Has esthetic properties and comfort, humanizing the synthetic fibers in blends.

SPECIAL PROPERTIES OF CORVAL

1. On fulling, or to a lesser degree, rope washing, develops a soft-bulky, wool-like hand.
2. Blends especially well with bulkier fibers like wool and orlon.
3. Creates loft and kindness of hand in woven and knitted fabrics for all kinds of apparel.

SPECIAL PROPERTIES OF TOPEL

1. Used 100% or in blends, produces fabrics of enhanced hand and luster.
2. Blends with man-made or natural fibers, notably cotton, flax, nylon, Dacron, Kodel.
3. Results in economical fabrics of superior appearance and widespread interest to the apparel industry.

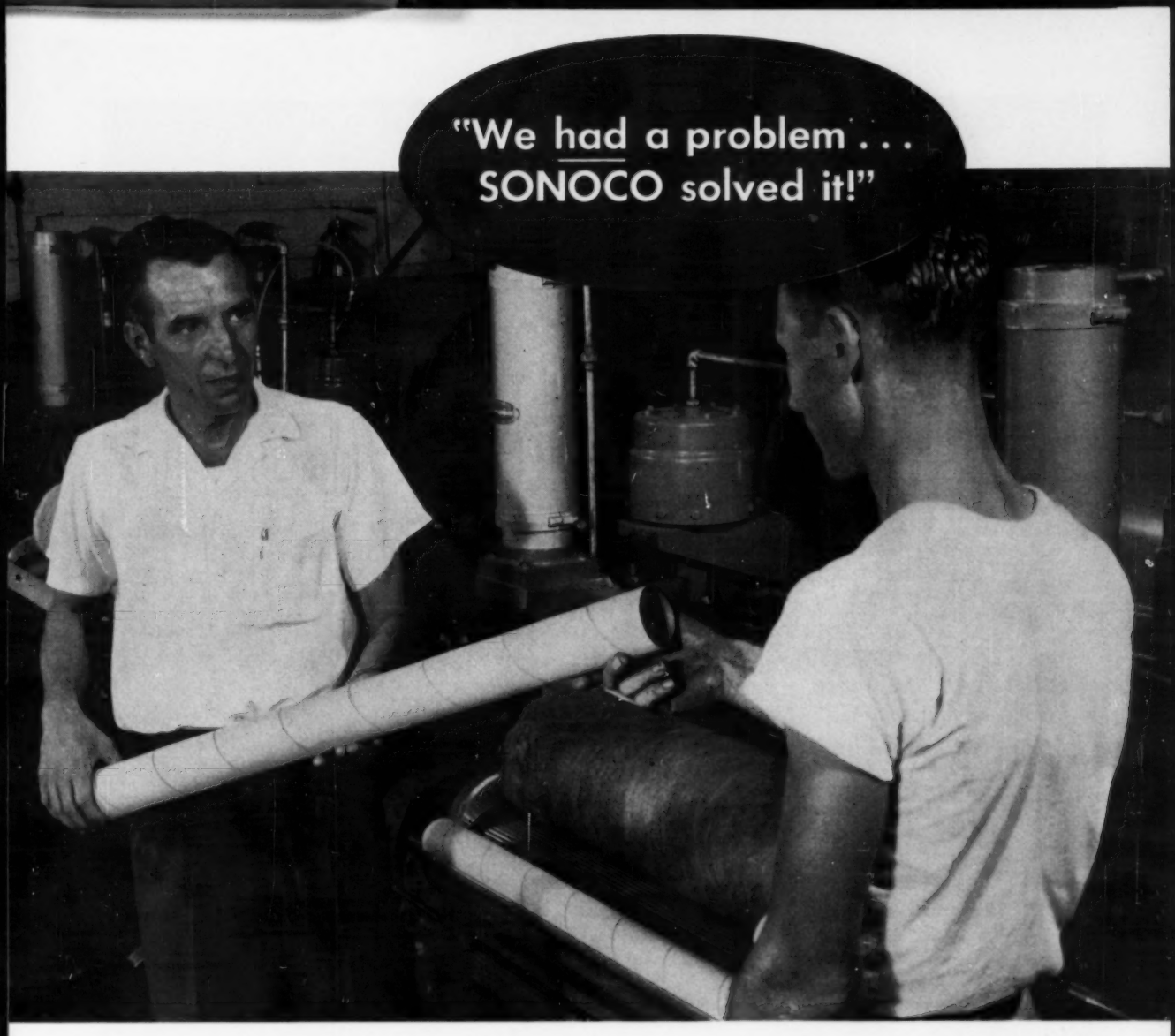
AVAILABILITY OF CORVAL

Bright and dull, regular and crimped,
in all deniers up to and including 15

AVAILABILITY OF TOPEL

1.5 denier, bright and dull
3 denier, bright and dull
regular 1¼ and 1⁹⁄₁₆ staple
regular 1⁹⁄₁₆ and 2" staple

Expert guidance in every phase of processing Corval and Topel is available upon request. Contact the Fiber Development Department, Courtaulds (Alabama) Inc.; *first in man-made fibers, first in cross-linking, first in solution-dyeing*, 600 Fifth Avenue, N. Y. 20—Greensboro, N. C.—LeMoyne Plant, Mobile, Ala.



THE NEED: An improved, lower cost picker lap tube

High quality picker lap tubes are essential in the trouble-free carding of natural and synthetic fibers. For years, the industry used convolute tubes with sulphur treated ends for durability. While this type served the purpose, prolonged use caused the hardened ends to chip off. In some cases, this condition resulted in damage to the card clothing.

Sonoco sales engineers, through research sought a solution to this problem. As a result, a new type, lightweight *spiral* picker lap tube has been developed, tested and proved. It lasts up to three times longer than the old type! Sulphur-treated ends have been eliminated! And, *the cost is nearly 40% less!* That's progress . . . Sonoco-style!

Only Sonoco with 60 years' experience, plus modern research and completely integrated manufacturing facilities, could solve this problem quickly. It is typical of countless cases where Sonoco technical and production "know-how" has benefited the industry. *Let Sonoco experience help you!*

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CIRCLE 111 ON READER SERVICE CARD

688

SCHOLLER INTRODUCES AN AMAZING GROUP OF NEW, DURABLE SOFTENERS...

The Creamoyls

The result of more than two years of development and application on millions of yards of fabrics and all fibers...a group of finishes that imparts a wide variety of desirable properties with an ease of application that demands nothing more than required in the usual pad or exhaust methods...

The CREAMOYLS present variations of the same basic finish, each designed to do the very best possible job on each specific fiber and fabric requirement.

The CREAMOYLS are durable finishes that impart a fabulous loft and fullness of hand, a high degree of controlled softening without "ragginess", a fine surface lubricity and excellent anti-static qualities.

Manufacturers will discover many additional advantages in CREAMOYL finished fabrics: better cutting, more efficient sewing, will not discolor whitegoods on prolonged storage, and increases wash-fastness of many dyestuffs.

The CREAMOYLS are available as modified cationic, anionic, nonionic, and amphoteric systems and particularly recommended for enhanced finish on piece goods, knit goods, sweaters of wool or synthetic fibers, socks, anklets and leotards, non-woven fabrics, stretch yarns and fabrics.

Test samples are available on request. Please specify the fabric and fiber on which the finish is to be applied so that the proper, recommended CREAMOYL may be forwarded.

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Textile World

CHEMICAL TREATMENT AND FINISHING

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BLACK as your hat

A derby, to the man who wears one, can impart a sense of dignity and pride. But to the dyer any item of apparel that radiates vibrant lasting color, is a symbol of a job well done. When superior Vat Blacks are required, GDC's quality line of INDANTHRENE VAT BLACKS represent the perfect answer. These pure, easily dispersed dyes are readily adaptable to all methods of application. You can expect clean, full, level dyeings which result in uniform coloration from batch to batch. These agglomeration-free products can reduce the number of rejects and seconds, thereby effecting significant economies. Their over-all excellent fastness and absence of light tendering make the INDANTHRENE DIRECT BLACKS the dyes of choice in outdoor furnishings and other critical end uses. Level dyeing of stocks, packages, cheeses and beams coupled with good fastness to mill processing are further attributes of these versatile dyes. Just a few samples from our wide selection of vat blacks include: **INDANTHRENE DIRECT BLACK AG**—Newest non-compounded direct vat black—economical—excellent over-all fastness. **INDANTHRENE DIRECT BLACK RB**—A premium dye for washable articles and as a base for compound shades. Available in paste and dispersed powder form. **INDANTHRENE DIRECT BLACK CH, INDANTHRENE DIRECT BLACK CG**—Valuable for colored yarn effects in white and for cotton package dyeing in circulating machines. **INDANTHRENE BLACK BB**—Vat dye of choice for jet-black shades on yarn and hosiery. The INDANTHRENE DIRECT BLACKS described above are available as infra pastes—speck-free, non-settling, non-specking and free-flowing. Write or call for detailed information on these, or any other dyes.

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Dye Aggregation Aids Lightfastness—

A report to the Fiber Society this month by L. Weissbein and G. E. Coven will show that direct dyes that form aggregates in the dyed medium are faster to light than those that do not.

Nine direct dyes of diverse chemical structure were used to dye ultrathin viscose films, and the dyeings were examined under an electron microscope. Only two of the dyes showed no aggregation at a resolution limit estimated at 30 to 40° A. Aggregates of the other dyes were plainly visible in viscose films dyed under the same conditions.

The apparently unaggregated dyes showed considerably less lightfastness on rayon fiber than those that aggregated in the viscose films.

New Mothproofing Chemical—

One of a group of substances called antimetabolites has been found to produce permanent mothproofing on moth-susceptible materials.

The chemical works by disrupting the insects' metabolism to a point where it dies from malnutrition because it cannot assimilate the nutrients in protein matter treated with the chemical.

Roy J. Pence, an entomologist at the University of California (Los Angeles), discovered the chemical, which is completely nontoxic to human beings and is colorless and odorless. It can be applied in the dyebath or as an aftertreatment in the home.

Inhibitors Cut Chlorine-Dioxide Losses—

Waste and corrosion caused by excess evolution of chlorine dioxide from acidified chlorite bleach liquors can be reduced by inhibitors recently discovered.

Alkaline formate added at a rate of 0.1 gram per liter to the bleach bath will improve bath stability, according to British Patent 808,669. Sodium, potassium, or ammonium formate may be used.

Another method, described in U. S. Patent 2,898,179, uses three to six parts of citric acid and four to eight parts of an alkali-metal nitrate to each part of sodium chlorite in the bath. The bath is buffered to pH 4.5 to 5.5 with sodium acid phosphate. The inhibitors are effective in the usual processing-temperature range.

Reactive Binders Improve Pigment Prints—

A new series of colors and clears and a reactor that forms cross-links with binders to produce prints with improved fastness to washing and wet crocking were announced last month by Interchemical Corp., Colors & Chemicals Div., Hawthorne, N. J.

The water-dispersible pigment systems are marketed as Aquaprint Supra colors and clears and Aquaprint reactor.

The reactor functions as an efficient cross-linking agent between the reactive binders present in the pigments and clears that make up the printing emulsion.

During the drying, curing, or ageing operations after printing, large molecular aggregates are formed by the cross-linking reaction. The result is an integrated pigmented film that is highly resistant to repeated home washing, commercial laundering, and wet or dry crocking.

There is evidence also that cross-linkage occurs between the reactive groups in the binders and reactive groups present in man-made fibers such as the polyamides, polyesters, and polyacrylics. The improved fastness qualities of prints on cotton or rayon indicate some degree of cross-linking with these fibers also.

Cross-linking of the reactive elements of the printing emulsions with Quilon-treated glass fabrics is also indicated by the improved fastness of the prints on these goods.

Best results are obtained by using colors and clears containing the reactive binder plus the reactor. However, reactive clears and the reactor can be used with pigment colors that do not con-

tain a reactive binder. The Supra colors and clears may be used without the reactor if maximum fastness to wet crocking is not necessary.

A typical cut clear is prepared as follows:

Aquaprint Supra Clear	2.0 gals.
Water	56.0 gals.
Mineral spirits	40.5 gals.
Amonia, 28%	1.5 gals.
Total	100.00 gals.

A high-speed mixer is used to form the emulsion, to which the Aquaprint Supra color is added.

The printing emulsion is finished by adding auxiliary clear and the necessary amount of reactor, according to the depth of shade.

Printing is carried out as usual on roller- or screen-printing machines.

Maximum color fastness is obtained by curing the prints for 3 mins. at 300° F. after the initial drying. However, the fastness obtained by acid ageing or neutral steaming nearly equals that provided by curing. This fact is of importance where pigment prints are used with dyes that require ageing for development. It is also important where heat-sensitive man-made-fiber fabrics are processed. The new colors have no more effect on fabric hand than previous formulations.

Improve Wool Crimp With Phenol—

Recent Australian research shows that wool fibers that normally exhibit only a wavy conformation can be made to assume a tight spiral shape if they are treated with phenol solutions.

The treatment is based on the fact that wool fiber has two distinct longitudinal structures, the para cortex and the ortho cortex. Differences in internal tensions of these two portions of the fibers set up strains during growth that cause the fiber to curl. Because the wool is closely packed on the sheep's back, the curling effect is held to a less-pronounced waviness.

When the loose wool is treated with fairly strong solutions of phenol, the fibers first straighten out and then develop tight spiral coils. The ortho cortex is affected first by the phenol and is normally that portion of wool fiber that is found on the inside of a naturally curved section. The changes in the fiber are complex but controllable.

The process opens up possibilities of modifying the crimp in wool fibers better to suit them for special purposes.

Polarity Affects Soil Removal—

The polar characteristics of both the fiber and the detergent that is used to clean it are important factors in any scouring operation.

Workers in Great Britain found that polar fibers such as wool that have been soiled with nonpolar material such as grease or oil scour out readily with the aid of an anionic detergent such as sodium oleate or myristate.

The molecules in this type of detergent attach themselves to the wool fiber by their hydrocarbon tails, and the polar groups are exposed to the dissolving effect of the surrounding water. This condition promotes wetting out. At the same time, the nonpolar soil rolls up into droplets that are detached from the fiber by mechanical agitation or mangling.

Nonpolar fibers such as nylon, Dacron, polyethylene, or Teflon do not respond in this way and are more difficult to scour.

Nonionic detergents that are used to scour wool do not promote the agglomeration of soil particles for easy removal but tend to form a complex with the soil that adheres to the fiber and requires more mechanical agitation for its removal.

This point is of interest to plants that are considering changing from the usual alkaline scour to the acid scour operating at or near the isoelectric point of wool (pH 4.2).

Trichloroacetic Acid Boosts Dye Pickup—

Polyester fibers will absorb substantially more disperse dyes if about 5% of the dyebath consists of trichloroacetic acid. An anionic wetting agent is recommended as a dyebath assistant. The addition of the acid enables the dyer to produce deep shades under conditions that would otherwise produce only slight staining. (British Patent 789,333 to ICI Ltd.)

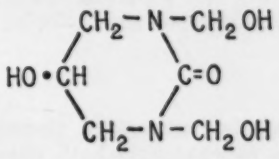
New Resin Cuts Chlorine Damage to Cottons—

Researchers at Southern Regional Research Laboratory, New Orleans, have come up with a cyclic-urea type of resin that is more resistant to the formation of chloramides in commercial laundering.

Where the familiar dimethylol ethylene-urea type of resin contains two nitrogen atoms in a cyclic five-member structure, the new resin, like the triazones, has a full six-member structure. The configuration is believed to be responsible for the greater resistance to hydrolytic cleavage.

Fabrics treated with the resin have good crease resistance and resistance to yellowing, and retention of finish through many launderings is excellent.

The resin is described as a dimethylol derivative of tetrahydro-5-hydroxy-2 (1H) pyrimidinone, with the structure:



Solvents Aid Continuous Dyeing—

Various nylon or wool materials in fiber or fabric form can be dyed continuously with acid dyes by a method described in U. S. Patent 2,888,313 to Henry R. Mautner and assigned to General Aniline & Film Corp.

The method is based on the inclusion in the dye solution of water-soluble solvents such as the N-lower alkyl-2-pyrrolidones, N,N, disubstituted formamides, gamma-butyrolactone, and the lower aliphatic polyhydric alcohols and partial alkyl ethers thereof.

The dyeing solution also may contain an acid-reacting salt for purposes of pH control. Examples are the sulfate, acetate, nitrate, or ferrocyanide of weak bases such as ammonium or aluminum. Dye solution and penetration are also added by adding organic esters such as propyl, butyl, or isobutyl acetate, or butyl, isobutyl, amyl, and hexyl formates.

In a typical procedure, a dyebath is made up with 4 oz. per gal. Sulfon Cyanine 5RA, 2 oz. per gal. Wool Fast Orange GA-CF, 1 oz. per gal. Anthralan Red BA-CF, 10 oz. per gal. N-methyl pyrrolidone, and 3 oz. per gal. ammonium acetate.

The pad liquor is heated to 200° F. and run into a Williams unit through which nylon tape is led at a speed to permit 30 secs. exposure to the hot dye liquor.

The tape is squeezed out and put through a continuous steamer for 3 mins. at 215° F. and continuously rinsed and scoured at the boil for 1 min. in a 0.1% solution of sodium-N-methyl-N-palmityl taurate. A deep, level shade of black is obtained that has good general fastness.

The general method is the same for nylon or wool fabrics, and several types of acid dyes are applicable by the process. They include the metallized acid dyes, acid mordant dyes, and many of the azo, quinoline, pyrazolone, and di- or trimethylmethane colors. Also useful are the acid anthraquinones, dyes based on xanthene, and the chromoxan dyes derived from oxytrimellitinic acid.

Did You Know . . .

. . . that polyester-fiber tow can be stretched, impregnated with dye, dried, crimped, and cut in one operation?

Disperse dyes and solubilized vat dyes may be used in the process; and if dye carriers are used, the volatile types such as chlorobenzenes or orthochlorotoluene are preferred.

The process involves treating the tow with steam at 100° C., stretching it 4.7 times its original length, and then passing it through the dyebath at 80° C. Excess liquor is squeezed out and the fibers are dried, and while still hot they are forced into a crimping apparatus.

The fiber is then cut and the cut staple is steamed under pressure for 40 mins. at 130° C. to develop the color.

•

. . . that the choice of acid used in diazotizing may affect the degree of corrosion of stainless-steel dye vessels? Recent experiments in England have shown that for most stainless steels that are used for dye-machine construction, sulfuric acid has much less corrosive effect than hydrochloric acid. Azoic dyeings made on polyester-fiber fabrics were equally satisfactory where either acid was used in the diazotization process.

Corrosion on molybdenum-bearing stainless steel was 0.08 gram per sq. ft. when immersed in hydrochloric acid and sodium nitrite at 85° C. for

12 hrs. When sulfuric acid was used, losses were only 0.01 gram per sq. ft.

Less acid-resistant steels showed much greater losses—up to 5.6 grams per sq. ft.—with hydrochloric acid as compared to 0.01 to 0.03 gram per sq. ft. for sulfuric acid.

The difference in losses could be economically significant over a long period of time.

•

. . . that if partially regenerated viscose yarns are run through a formaldehyde bath, they can be stretched more easily?

The 4% formaldehyde solution or a solution of acetaldehyde or glyoxal is interposed between the coagulation and the final washing steps, and its effect on the viscose is to reduce the effort necessary to stretch the yarns by about 65%. According to British Patent 812,254 to Vereingte Glanzstoff-Fabriken A.G., high-tenacity yarns can be produced in this way with much less yarn breakage.

•

. . . that colloidal silica, applied during the mechanical picking of cotton, upgrades the fiber? The chemical is mixed with the water that is normally used to aid the operation of the spindles on the mechanical picker. Advantages claimed for treating the fiber in this way include increased yarn strength, better abrasion resistance for knitted fabrics, and increased mill efficiency. The colloidal-silica application does not interfere with ginning operations.

NEW DYES AND CHEMICALS

Disperse Dye

Artisil Foron Brill. Yellow 6GFL Pat. Ultradispersed . . . produces greenish-yellow shades of excellent all-around fastness on man-made fibers. The dye is supplied in 0.5- to 1.0-micron particle size, which makes it suitable for package dyeing and printing. The dye is rated excellent to sublimation and is suggested for acetate, triacetate, acrylic, polyamide, and polyester fibers. Sandoz, Inc., 61-63 Van Dam St., New York 13, N. Y. **(Circle D-1 on Reader-Service Card)**

Thermosetting Resin

C-Tron . . . is a low-formaldehyde-content resin that imparts excellent crease resistance and shrinkage control to natural and man-made fibers. The very low formaldehyde content reduces the chances of odor formation in fabrics finished with the product. In many cases, it is not necessary to afterwash treated goods. Crown Chemical Corp., 240 India St., Providence 3, R. I. **(Circle D-2 on Reader-Service Card)**

Resin

Fabrez P-613-M . . . is a monomeric urea-formaldehyde resin produced in uniform, smooth paste form. It is used for crease-resistant and shrinkage-control finishes on spun rayons and blends of spun rayon with acetate, cotton, or wool. The resin is compatible with most softeners, dye fixatives, and other commonly used additives. Reichhold Chemicals, Inc., RCI Bldg., White Plains, N. Y. **(Circle D-3 on Reader-Service Card)**

Vat Dye

Indanthrene Corinth B Infra Paste . . . can be used for self shades ranging from lilac tints to full grayish purplish reds. The dyestuff has excellent all-around fastness, good resistance to overreduction, high leuco stability, and good dyeing properties. It is recommended as a base for deep chocolate browns and warm grays. General Dyestuff Co., 435 Hudson St., New York 14, N. Y. **(Circle D-4 on Reader-Service Card)**

Defoamer

Emka Defoam . . . is a water-dispersible liquid that is effective in reducing foam in acid or alkaline liquors. It is recommended for any textile processing in which foam is a problem. Emkay Chemical Co., 319-325 Second St., Elizabeth, N. J. **(Circle D-5 on Reader-Service Card)**

Nylon Reactive Dyes

Procinyl . . . brands a range of reactive disperse dyes for nylon. Colors include a yellow, an orange, a scarlet, and a blue. The dyes have good all-around fastness properties and can be applied to stock, yarn, or fabrics by conventional methods. Leveling and coverage properties on irregular-dyeing yarns are superior to disperse dyes in general. Arnold, Hoffman & Co., Inc., Providence, R. I. **(Circle D-6 on Reader-Service Card)**

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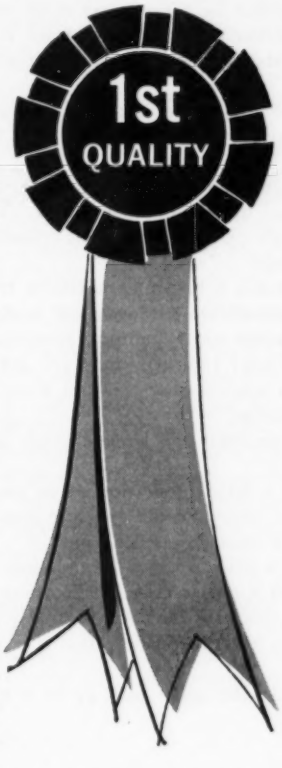

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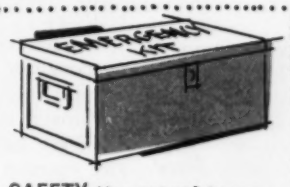

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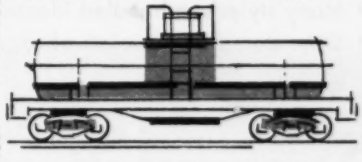

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Good System Simplifies Carolina Mills' Dyeing Operation

At Newton, N. C., Plant 4, Carolina Mills, Inc., has a streamlined circular-knit cotton-goods dyeing operation that is based on relatively few procedures. Work goes through smoothly because—

- **Many styles are handled identically**
- **Operators at key points always have written procedures to follow**

SYSTEMATIC HANDLING of goods from receiving to shipping plays a big part in the success of Carolina Mills' dyeing operation.

The Newton, N. C., plant processes circular-knit cotton goods on a commission basis at a rate of better than 100,000 lbs. per week. Styles vary somewhat in goods that wind up in T-shirts, underwear, infants' knitted terry fabrics, and narrow garment trim; but basically processing is kept very simple.

Good handling tactics start in the receiving room, where each customer's goods are allotted an accessible space from which they are easily moved out by lots. Each piece is identified with a tar mark, and lots that are to be bleached are made up in a continuous strand by sewing the pieces together.

As the pieces are run off and sewed together, they go into a long scray with a short J-box terminal. The two scrays each hold a 4,000-lb. kier load.

From the scrays, the goods are pulled through a saturator that contains a wetting agent and an optical bleach.

The normal kier charge for a full bleach on 4,000 lbs. of goods is 150 lbs. of 35% peroxide plus detergent and a silicate buffering agent. Full control of the bleaching process is assured in two ways. Each lot is accompanied by a work sheet that specifies the formulation to be used in bleaching, and each formulation is kept in plain view of the operator in a glassed-in frame mounted on the work platform.

In addition to the chemicals to be used, the time and temperatures for each type of kier boil are listed on the formula sheet.

Peroxide is stored outside and is weighed out into the 1,200-gal. tank that is used to hold the kier charge. The kier operator refers to his permanent formula-reference frames for the right amount.

The average kier boil takes 5 hrs. at a maximum temperature of 190° F. Temperature rise and hold is automatically controlled, a further aid to uniform processing.

After the goods have been bleached, they are pulled out of the kier through a slack washer in warm water to remove the residual chemicals.

A winch delivers the bleached and washed goods into slotted circular trucks.

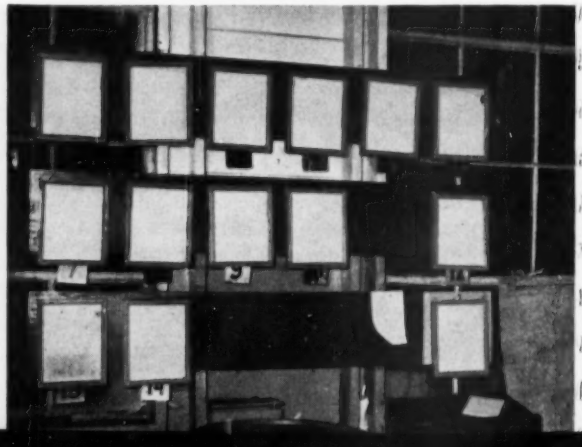
Carolina Mills finishes a large proportion of its goods through a double pad that evens out the moisture content in the first nip and applies finish in a second nip.

Here again, attention is paid to exact formulation for the lot, nip pressure, and spreader size. The operator's work sheet also provides space for his notes regarding the over-all appearance of the lot because inspection is a part of his job.

From the finishing pads, the goods may go to a loop

FORMULAS AND PROCEDURES for kier-boiling operations are always available for reference. Work sheets have numbers that correspond to numbers on each of the boards shown here.

FINISHES for all styles are written out in 14 numbered formulations. The starch mixer places a correspondingly numbered tag on the tank in which the finish is mixed.



dryer or a newly installed tensionless dryer that helps to control shrinkage.

After the drying operation, the goods are put through a steaming and calendering operation and rolled up for shipping.

Resins Help Shrinkage Control

The battle to control shrinkage of knitted fabrics has been helped a good deal by applying thermosetting resins to the fabric. Carolina Mills does considerable resin finishing and is able to control shrinkage within 5% either way on many styles.

Goods that are to be resin finished are first dried in the loop dryer and then are put through a finishing pad where they pick up a resin solution. About 2% solids is required to stabilize the fabrics.

The resin-treated goods are dried and cured in the tensionless, drum-type dryer and do not require afterwashing.

Practically all of Carolina Mills' dyed-goods production is done with direct and developed dyes. Light shades are bleached, but medium and dark colors can be dyed directly on gray goods. The 10 dyebecks and a small sample beck are fitted with temperature controls that help the dyer in establishing formulas and routines that will reproduce a given shade time after time.

Finishing procedures for dyed goods are the same as for whites.

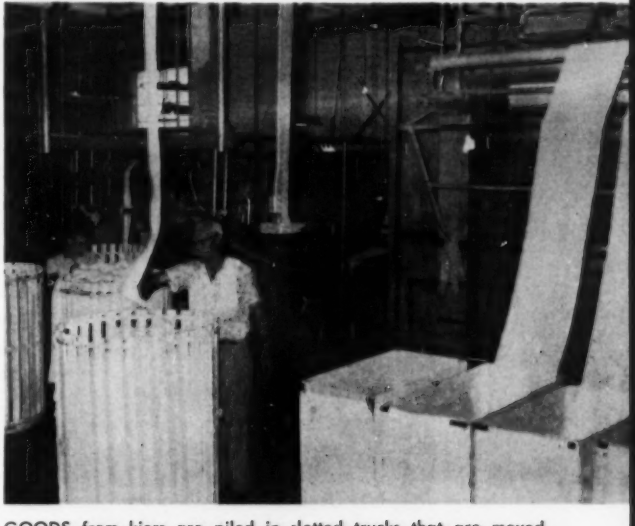
Heat Exchanger Pays Its Way

All hot waste water from the bleachery and dyehouse is pumped through a heat-exchanger system that recovers enough heat to chalk up an annual saving of $8,000 to $9,000, according to plant activity. The present unit occupies little space and is equipped to reverse the flow of waste water in the tubes so that it is self-cleaning.

Hot-water lines to dyebecks are served from an open 3,000-gal. tank by a 15-hp. pump that works constantly in the circulating system.

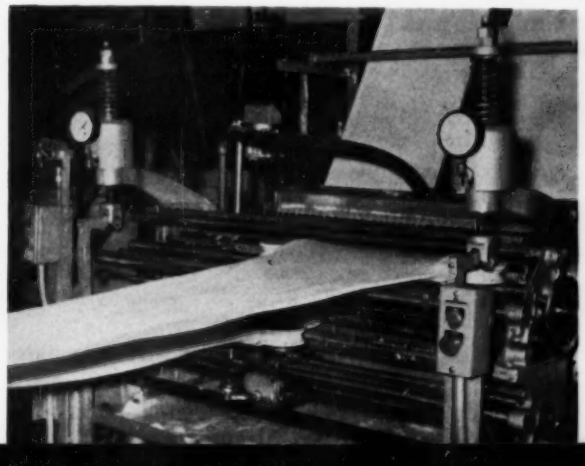
When 60° fresh water is put through the shell at 50 gals. per min. and 140° waste hot water flows through the tubes at 75 gals. per min., the incoming fresh water is heated to 130° F. This average situation, which is often bettered, cuts steam requirements by over 1,800 lbs. per hr.

GOOD MATERIALS HANDLING extends even to chemical storage on receiving platform. Each type of material is lined up in separate alleys to simplify withdrawal and inventory.



GOODS from kiers are piled in slotted trucks that are moved over to turntables at finishing pads in rear center. The loop dryer at right is used primarily to dry goods that get a resin finish.

DUAL-NIP FINISHING PADS carry two strands of goods and have a circulating system for finishing materials. Gauges show nip pressure, which is varied to suit the type of goods and finish.



HEAT EXCHANGER is a silent business partner that not only saves steam but also speeds up operations by helping to keep hot water always on tap.

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At the Franklin Process Fingerville Plant

Bleaching of cotton yarn is not a sideline with us; it's a *specialty*. Our whole processing plant at Fingerville, S. C. does bleaching exclusively. Specialization such as this assures shade uniformity and eliminates contamination from colored yarn fly. Specialization in bleaching is only one of many advantages that Franklin Process offers. Whether your requirement is yarn bleaching or yarn dyeing, here are other features of Franklin Process Service to consider: —

FRANKLIN SPRING. This spring permits soft packages to be compressed more and hard packages to be compressed less, in the processing machine, into solid columns of uniform density. Uniform penetration of the dye or bleach liquor and uniform shades result. The 1⅝" diameter tube lessens the differential between the inside diameter and the outside diameter of the package, so the dye or bleach does not tend to concentrate on the inside. The liberal spaces between the wire spirals also permit a free flow of the dye liquor. White "cross overs" seldom occur.

LARGE BATCHES. If you need long runs of one shade, we can supply that shade in ONE DYE BATCH — up to 2,500 lbs. in size. Thus you don't have to worry about mixed batches.

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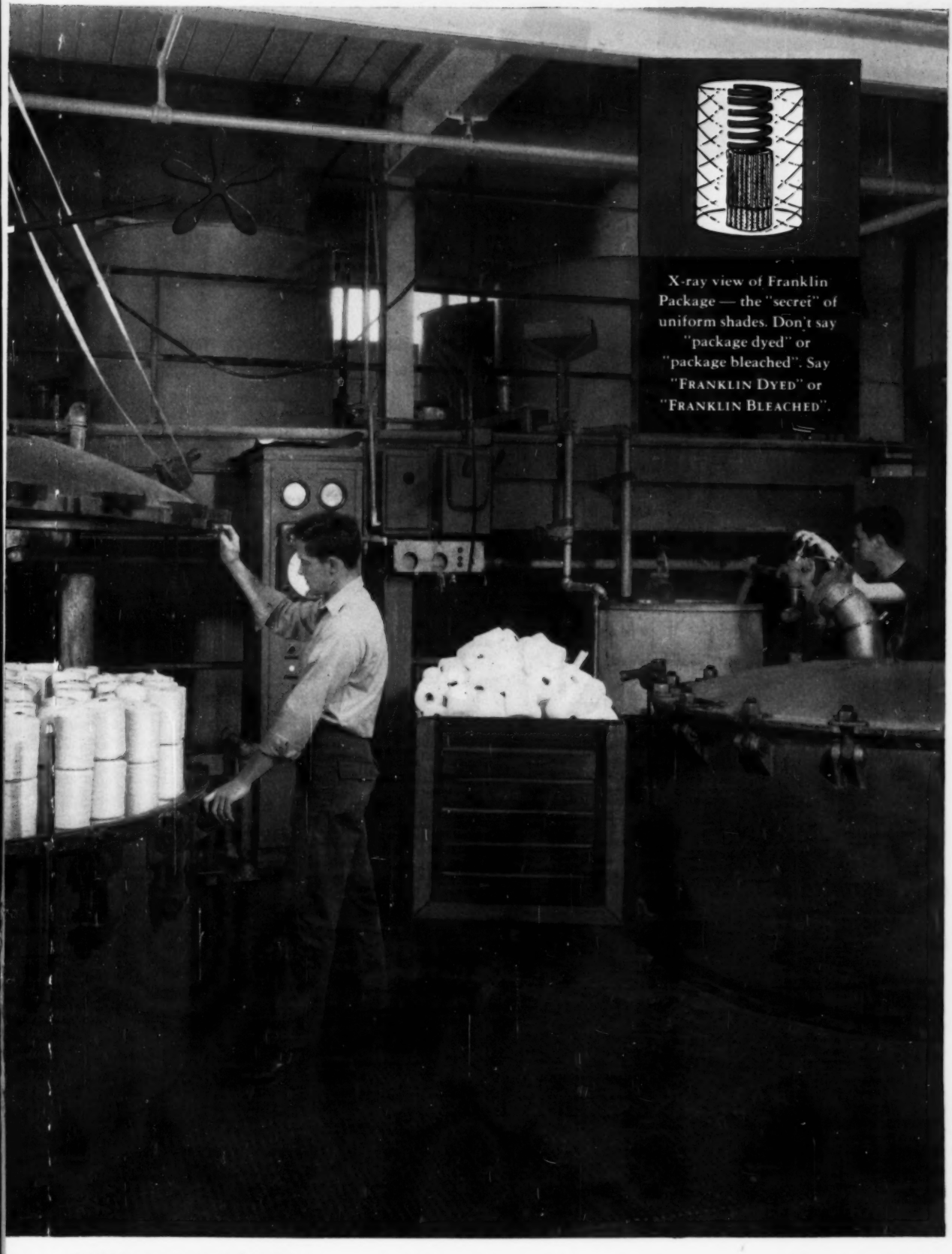
Interior view of yarn bleachery at Fingerville, S. C.



X-ray view of Franklin Package — the "secret" of uniform shades. Don't say "package dyed" or "package bleached". Say "FRANKLIN DYED" or "FRANKLIN BLEACHED".

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Use Caustic Soda To Shrinkproof Wool

• Researchers have found recently that caustic soda can be used to shrinkproof wool without serious fiber damage. Here is a run-down on old and new methods that show considerable promise.

By **A. J. HALL,** B. Sc., F.R.I.C., F.T.I., F.S.D.C.

CAUSTIC SODA and other strongly alkaline substances including the quaternary-ammonium hydroxides have always been regarded as dangerous substances to use at almost any stage of wool processing, whether preparing wool for dyeing, dyeing itself, or wool finishing. Whenever possible, the use of strong alkalis has been avoided or they have been used in as weak a form and as sparingly as possible.

Many ways have been devised from time to time so that whenever a wool process requires the use of a caustic alkali the wool is specially protected from possible damage such as harshening of hand, yellowing, loss of tensile strength and extensibility, or decreased resistance to abrasion—all more or less comprised in a general loss of durability.

But new special treatments of wool with alkalis to improve rather than impair the wool now suggest that in the near future caustic soda may be looked upon as a practical aid to improving the fiber.

How Caustic Affects Wool

One very important feature of the behavior of wool toward caustic alkalis is that, according to the conditions of time and temperature and also on the concentration of the aqueous caustic alkali solution, each wool fiber swells considerably with imbibition of the liquor until a point is reached at which a considerable amount of the wool substance dissolves and leaves the fiber much impoverished.

This effect was noticed early in the mercerization of cotton piece goods that contained wool-effect threads and particularly cotton poplin and satin fabrics woven with a colored (often yellow) worsted selvage[1]. Mercerization was required to give increased luster to the cotton or assist its subsequent dyeing with aniline black.

Under ordinary mercerizing conditions, the wool selvage often broke under the high tension applied to the fabric and generally it suffered chemical change so that instead of remaining a bright yellow color during the aniline-black dyeing, it acquired a dirty greenish-brown color.

Brine Wash Saves Wool

An addition of formaldehyde to the mercerizing liquor gave some uncertain protection to the wool; but complete protection was obtained by washing out the strongly alkaline mercerizing liquor with brine instead of water. A mercerizing liquor itself is sufficiently concentrated not to damage wool under mercerizing conditions.

This early experience is noted because it led to the belief that the processing of wool with caustic alkaline liquors would be less damaging if the penetration of the alkaline liquor could be restricted and, in fact, if penetration could be restricted to the outer layer of epithelial scales of each fiber, then the damage would probably be negligible.

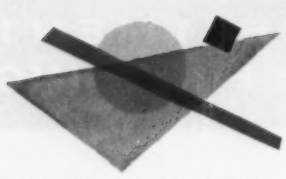
The absence of appreciable damage to the wool by the mercerizing liquor as applied to brine-rinsed cotton fabrics containing wool threads was considered to support this viewpoint because under the cold rapid conditions of mercerization commonly employed, the viscous caustic-soda solution penetrated wool very little.

This theory concerning the manner in which caustic alkalis act to produce damage in wool has enabled useful processes to be devised in recent years to reduce the felting power of wool and thus allow wool to be finished so as to resist shrinkage during washing.

While these newer processes were being developed, J. B. Speakman found that wool fibers that had been made shrink resistant by chlorination with acidified solutions of sodium hypochlorite and then washed and treated in dilute alkali developed a jelly-like surface.

This surface characteristic is necessary to good shrinkage control, but the chlorination must be carefully controlled or the jellying effect of the alkaline afterwash will be too severe.

The next step was to produce the



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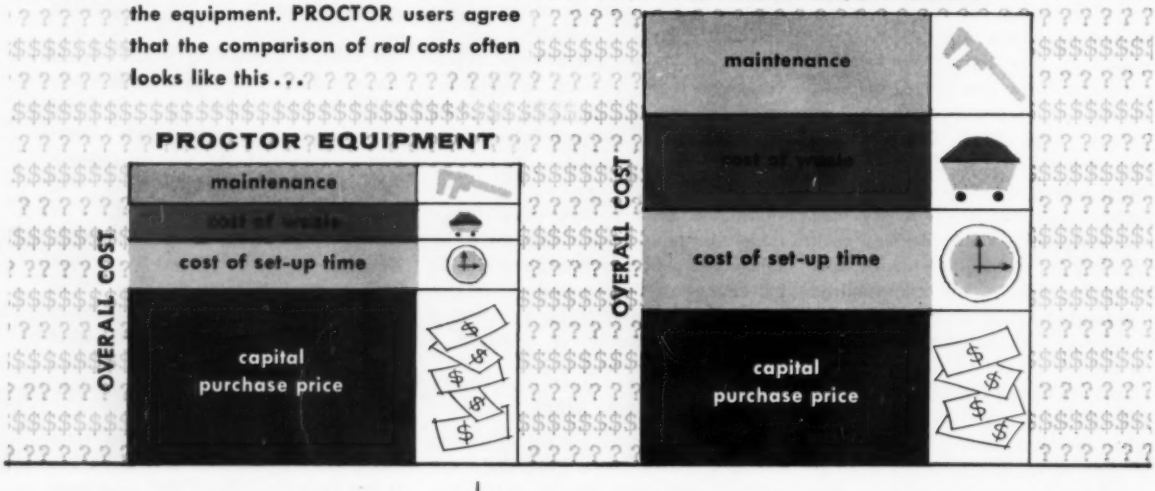

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smooth, jelly-like surface on the fiber by means of a controlled caustic treatment without prior chlorination.

Success in this direction was obtained in both Australia[2] and in Britain[3] by using solutions of caustic soda in nonpolar or substantially nonpolar solutions. The Australian method used a solution of caustic soda in ethyl alcohol containing only 1 to 2% of water, while the British method used a 0.6% solution of caustic soda in an anhydrous 9 to 1 mixture of a petroleum solvent and butyl alcohol.

Solvents Protect Wool

The absence of water in these alkaline liquors had the desired effect of limiting the action of the caustic soda to the surface of each fiber and at the same time was sufficient within, say, 1 hr. at room temperature to cause a jellying of the fiber surface sufficient to give a nonshrink finish without appreciably lowering the quality of the wool.

In a typical treatment by the British process, air-dry wool is entered into about 20 times its own weight of a solution at about 18 to 20° C. prepared by dissolving 0.6 parts of caustic soda in a mixture of 9 parts of white spirit and 1 part of n-butyl alcohol. After 1 hr., the wool is hydroextracted and then rapidly neutralized with dilute sulfuric acid. It is important that this neutralization be very rapid and uniform or damage to the wool will occur.

Wool treated in this way will not shrink in washing and is not appreciably impaired. These processes have been carried out on a large scale and have proved their value, but they do suffer from the disadvantage of requiring the use of an organic solvent that is both costly and a fire risk.

For this reason, technologists in this field turned attention to the possibility of modifying the action of aqueous caustic liquor on wool so that such liquors could replace the solvent-based solutions.

Australian research has quite recently shown that an unshrinkable wool finish can be produced satisfactorily from an aqueous solution of caustic soda saturated with common salt.

This process is similar to that developed by W. Marshall for the protection of wool selvages during the mercerization of cotton fabrics 40 years ago.

In the new Australian process, as described by J. R. McPhee[4], the protection of the wool appears to be based on the repressive action on fiber swelling exerted by the inorganic salt present in the aqueous caustic-soda solution. Thus wool fibers similarly steeped for 15 mins. in 1.25-N.(5%) caustic-soda solutions containing 0% and 12% of common salt swelled 77% and 39% respectively; with a caustic-soda solution saturated with common salt, the swelling is considerably less.

In a similar 1.25-N caustic-soda solution containing 13% of sodium sulfite, the fiber swelling is only 21%. It is believed that in a corresponding caustic-soda solution in a mixture of petroleum solvent and butyl alcohol, the fiber swelling is even less.

According to McPhee, satisfactory unshrinkable wool can be produced by a treatment at 25° C. with a 1.25-N. solution of caustic soda containing at least 12% of common salt. Some slight yellowing of the wool occurs but can be avoided by adding a small amount of sodium hydrosulfite or similar reducing agent to the caustic-soda solution. Otherwise the wool will retain substantially its original characteristics.

Inorganic salts other than common salt, for example sodium thiocyanate, sodium thiosulfate, and lithium chloride, can be used; but generally common salt is used because it is cheapest.

Salts Cut Solubility

Investigation of the influence of the addition of such salts to the caustic-soda solution has shown that their presence does not appreciably affect the absorption of hydroxyl (OH) ions by the wool although the fiber swelling is considerably depressed. It is thus not possible to explain the protective action of the added salt on the basis that chemical degradation of the wool is hindered by less alkali absorption.

But it has been established that alkaline decomposition products of wool are less soluble in brine-saturated caustic-soda solutions than such solutions containing no common salt. Thus the protection of the wool may be partly explained by the fiber retaining any degradation products produced during contact with the caustic soda.

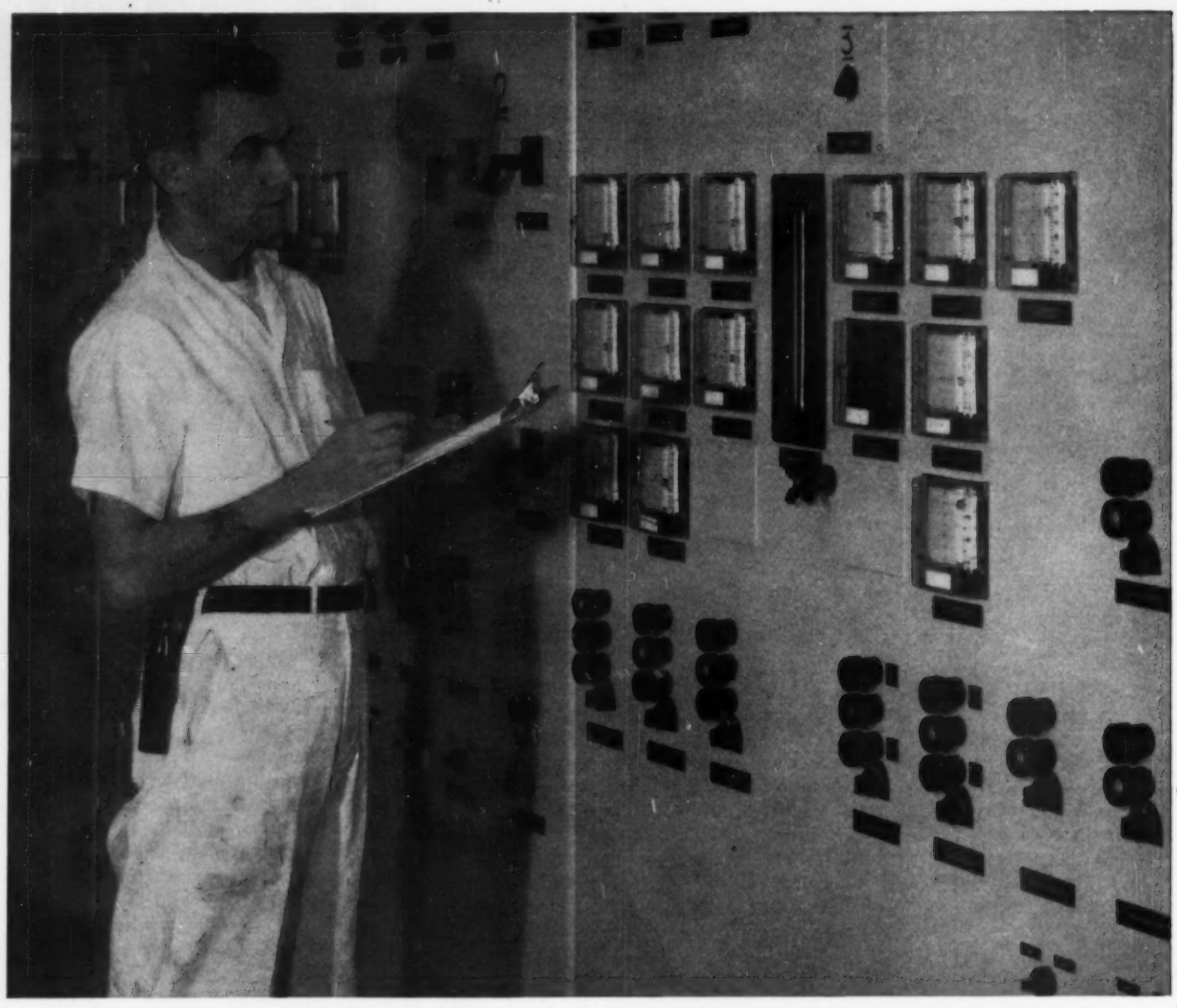
These new facts regarding the effect of caustic on wool should be helpful in processing wool when it is necessary to do so under strongly alkaline conditions.

References:

1. British Patent 323,307
2. Freney & Lipson; Council for Scientific Research, Australia, Pamphlet No. 94 (1940)
3. British Patent 538,396
4. J. R. McPhee; J. Textile Research, 1959, 29,303

CORRECTION

In the article "How To Choose a Pigment-Printing System" on p. 71, August issue, an error in terminology occurred. The terms "oil-in-water" and "water-in-oil" were reversed. Wherever these terms appeared they should be reversed.—*Editor*



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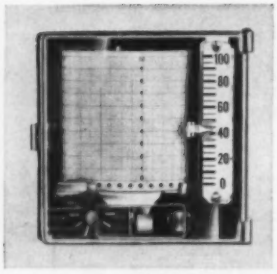

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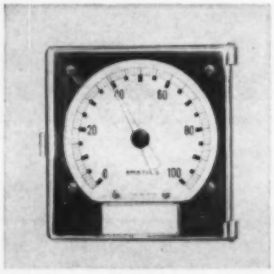

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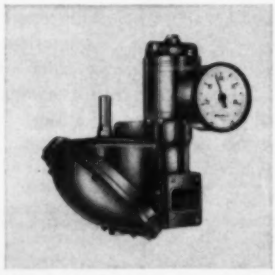

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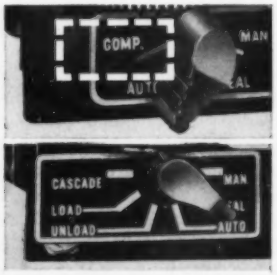

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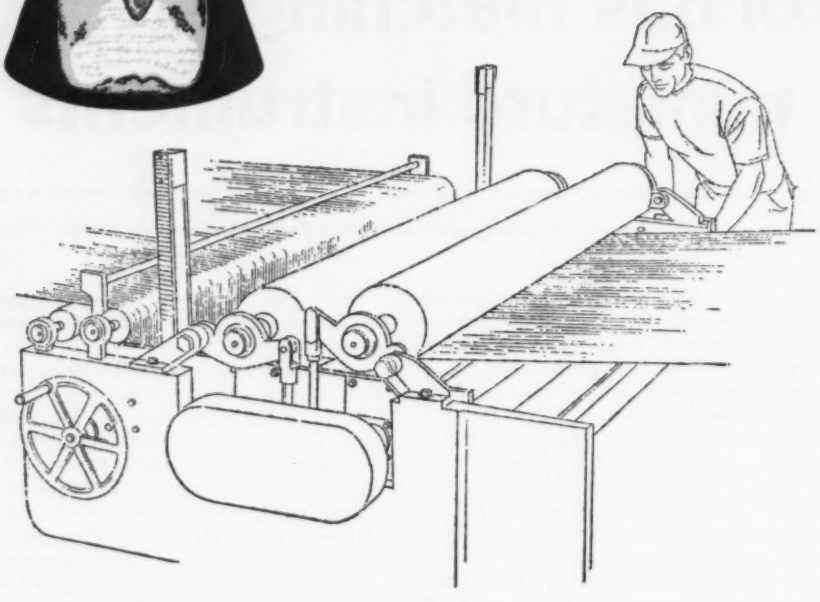

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A TEXTILE WORLD Refresher

Preparation and Bleaching—

6. The Scouring Process

- How raw stock is scoured
- How yarn and piece goods are prepared

By PROF. KENNETH S. CAMPBELL, Dept. of Textile Chemistry
N. C. State College School of Textiles

COTTON MAY BE SCOURED in most of the physical forms in which it is handled from raw stock to woven fabric. Only the basic methods will be discussed here with some attempt made to emphasize the salient points and precautions necessary to avoid difficulties.

Raw stock is usually scoured in a cylindrical tank or kier, preferably of stainless steel, capable of holding approximately 1,000 to 3,000 lbs. (2 to 6 bales) of cotton. These machines may be open, in which case a temperature of 200° F. is about maximum, or closed, when temperatures of 240 to 250° F. can be attained. Liquor is usually circulated by centrifugal pumps in one direction only, from top to bottom.

Because a certain amount of channeling is almost certain to occur as the circulating liquor seeks the paths of least resistance, blending of the stock after processing is essential.

The scouring formula employed for stock to be dyed will usually be just enough to remove enough of the surface waxes and readily soluble pectins and ash to make the fibers easily wettable with the hot dye liquor. A 30-min. scour at 190 to 200° F. with 2% soda ash owf., plus a small percentage of a synthetic detergent, followed by thorough rinsing, will often be satisfactory.

For cotton that is to be bleached, a more-severe treatment is required. Formulas will include 4% caustic and a small amount of suitable wetting agent or detergent, and the goods will be scoured at 190 to 200° F. for from 1 to 4 hrs. For bleached absorbent cotton, a 4-hr. boil in 5% caustic plus 1½% owf. detergent at 240° F. is necessary.

METHODS FOR SCOURING YARN

Cotton skeins, weighing 1 lb. or more apiece, are processed in a variety of equipment. Tubs and several makes of machines with varying capacities of from 10 to 500 lbs. or more are used. The machines permit movement of the skeins in the treating liquor or the liquor through the skeins in various ways so as to achieve uniform results.

Occasionally, skeins are processed in kiers. In addition to skeins, yarn is processed in the form of a continuous rope or warp and also in 1- to 2-lb. packages of yarn wound spirally upon perforated or spiral-spring cores.

The formula for scouring yarn in any one of these physical forms will depend upon the quality of the cotton used in the yarn and the particular process that follows. An extremely simple scour is used for long-chain rope warps in indigo dyeing. It consists of a short passage (about 18 secs.) in soda ash at about 200° F. followed by rinsing.

If warps are handled in "short chain" (i.e., doubled enough times to make the resulting length somewhere between 250 and 300 yds.), then the equipment used for processing may be a single box fitted with squeeze rolls ("Scotch tub") or a series of such boxes at the end of which is a plaiter to pile the warp on movable platforms.

Passage of the warp through this equipment is repeated enough times to accomplish the boil-out, dyeing, and final wash. The severity of the initial boil-off is determined by the type of yarn and the dye to be applied. Some yarn in packages or beams does not require much more than a wetting out with alkali or penetrant before dyeing, particularly if the yarn is soft and coarse and the dye used is one that has good leveling properties.

Such a wetting out may be accomplished in 15 to 30 mins. at 200° F. With higher-quality yarns, rinsing after this scour may not be necessary except for cooling purposes prior to dyeing at low temperatures, as with vat or naphthol colors. With low-quality cotton, the brownish-yellow color of the solution might interfere with the bleaching or dyeing; so rinsing is required. This rinsing usually need not be complete enough to remove all the detergent, however, as these agents are frequently useful assistants in the dyebath.

Yarn mercerization prior to scouring removes some of the natural impurities present (including color) and therefore helps to reduce the severity of the scour needed. However, because packages and beams of yarn are very effective filters and will strain out insoluble matter that may interfere with the free running of yarn in later processes, the need for cleansing should not be underestimated; experience will be needed to show when it can be safely neglected. In those yarns where elimination of a preliminary scour has been established as safe, it has been found advantageous in the pigment method of vat dyeing to

Prepare any fiber, any fabric, for practically anything with TRITON non-ionic surfactants

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In wool scouring, kier boiling of cotton, boil off of rayon and acetate fibers, desizing and scouring of piece goods, in dyebaths, and in other mill and finishing processes, TRITON surfactants have distinct advantages that set them apart from other products. They can be used with hard water, and in both acid and alkali, because they are non-ionic. High temperatures normally do not break them down. They hold soils in suspension; oils and greases are emulsified. And TRITON surfactants do not remain in fibers, but rinse out quickly and completely.

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circulate the pigment dispersion directly into dry yarn. Dye distribution takes place more easily in cotton that has not had an opportunity to swell.

With some types of yarns, notably those spun from irrigated cottons that may contain unusual amounts of insoluble polyvalent metal compounds, a hot acetic-acid rinse will counteract the tendency of such impurities to reduce dye yield and fastness.

The normal loss in yarn weight due to scouring is 5 to 6%. (This loss is ordinarily made up for at least in part by the addition of softener in the last rinse after dyeing or bleaching.) All the natural waxes should not be removed from the cotton because over-scouring may produce a harsh yarn, which could give trouble in subsequent processing and fabricating.

PREPARATION OF PIECE GOODS

After the quench following desizing, cotton fabric is handled either in rope or open-width form. Rope form permits faster cloth speeds and simpler equipment; but goods that are relatively heavy or tightly woven or those that are sensitive to surface abrasion cannot be processed in this manner because crease marks, rub marks, and crow's feet will show up in the fabric after dyeing. As a rough guide, fabric heavier than 2 yds. per lb. requires open-width treatment.

Piece goods that are bleached and sold as white or that are to be printed must be given a comparatively severe boil-off. A good bottom is necessary to produce a good white and also to permit rapid absorption and subsequent fixation of print color.

In batch processing in kiers, a typical formula calls for 3.0% caustic soda, 0.25% detergent, and 0.25% tetrasodium pyrophosphate (all based on the weight of the goods).

Usual procedure calls for heating the kier to 205 to 210° F. over a 2-hr. period, treating at this temperature for 1 hr. with the kier open to eliminate any air, then closing the kier, raising the pressure to 15 lbs. (250° F.) over a 2-hr. period, and holding for 3 to 5 additional hrs. Thus the total time required, including about 30 mins. for rinsing free of caustic as a final step, may be up to 13½ hrs.; for some types of goods, the process may be repeated.

Use Care With Colored Yarns

Because the products of hydrolysis of any residual starch and other impurities associated with cellulose have a reducing action on color, fabrics that contain colored yarns may be scoured by a batch process only under mild conditions that do not reduce the dyes present. A pressure kier boil is generally not used, and the treatment is usually carried out below a boil with 1 to 2% soda ash as the alkali plus detergent and a mild oxidizing agent such as sodium nitrobenzenesulfonate as a protective agent, the latter being preferentially reduced instead of the dye. For some goods, the alkaline scour is dispensed with entirely because a single or repeated bleach may produce sufficient whiteness to meet requirements.

Cotton knitted goods are ordinarily not scoured before bleaching. The knitting yarns have never been sized and are usually fairly clean, and the whole structure is easily accessible to the treating liquors. A combination scour-bleach using alkaline hydrogen peroxide is quite satisfactory.

Woven fabrics that are too heavy to be processed in rope form or for small lots that do not justify the use of a kier or a continuous range can be scoured on a jig. The minimum volume of water is used with 4 to 6% caustic and about 0.5% of a compatible wetting agent. The cloth is run for four to six ends (or about 1 hr.) at 180 to 200° F. A running rinse is used to remove the caustic.

At no time in processing should caustic-saturated goods be allowed to dry out, as this will cause concentration of the caustic in the dried-out areas that show up after dyeing as dark streaks and spots.

Where Progressive Jigs Fit In

For the preparation of fairly large quantities of relatively heavy goods, the so-called progressive jig is used. This unit consists of a long rectangular box in which are mounted a series of beams or rubber-covered rolls that will carry 2,000 to 3,000 yds. of cloth. The lower halves of these beams are immersed at all times in a 6% solution of caustic that is maintained as close to the boil as possible. The goods are wound from one beam to another and require 3 to 4 hrs. to move through the machine.

The production of the progressive jig is in a sense continuous, as cloth is almost constantly being fed in one end and taken out the other. Becks are sometimes used to process woven cotton material; any or all wet treatments from desizing through dyeing may be performed on these machines. Becks can be set up to handle goods in rope form or open width as necessary. In general, the scouring formulas are about the same as those used on the jig; but treatment is somewhat milder because the liquor-to-goods ratio in the beck is approximately 20 to 1, whereas in the jig it is nearer 3 to 1.

Three Continuous Systems Are Used

There are three methods by which cotton fabric may be scoured continuously. The essential principle in all three is the exposure of cloth impregnated with 3 to 4% owg. caustic soda to saturated steam at close to 212° F. for a period of 30 mins. to 1 hr. The differences in the three systems are mechanical.

In the Mathieson system, goods are handled open width on an enclosed endless stainless-steel conveyor in an atmosphere of steam.

The Du Pont system utilizes insulated J-boxes preceded by a heater tube that serves to delay the cloth in passage while maintaining a steam atmosphere and a cloth temperature of 210 to 212° F. J-box capacities in standard systems range from 2,500 to 5,000 lbs. of cloth, and the goods remain in the J-box for about 1 hr.

In the Becco type, steam is introduced directly into the J-box to heat the cloth; and the box is open at the top, sealed only by the cloth itself.

In all three systems, the steaming operation is preceded by some type of saturator and followed by a continuous washer, either tight-strand rope, slack-loop rope, or open width. The efficiency of the washer really determines the permissible top speed of the range.

As has already been mentioned, mercerization alone accomplishes a certain amount of scouring. The 20 to 25% caustic-soda solution that is used to mercerize cotton, even though cold, coupled with the usual squeezes and hot-water washing, sometimes removes enough of the foreign matter so that the goods may be taken directly to the bleach.

This effect is especially useful with goods that contain mostly, or entirely, colored yarns. In such cases the bleach serves to complete the scour and to brighten the colors.

BRIEFS

on a new dewaxing process for cotton goods...a new drum for sulfides ...a fast way to choose between 50% and 73% liquid caustic soda

New drum for sulfides empties twice as fast

Here's a new 400-pound drum which you can empty twice as fast as previous designs whether you scoop, pour, or shovel.

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Sodium sulfide Na_2S—60 to 62%. NaCl—1.5% max. Fe—8 ppm max. Other metals—1 ppm max. Water of crystallization—35% min.

Sodium sulfhydrate NaSH—70 to 72% max. Na_2S—2.5% max. NaCl—0.8% max. Fe—5 ppm max. Other metals—1 ppm max. Water of crystallization—28% max. to 26% min.

The coupon offers technical data sheets on both chemicals for a more complete analysis.

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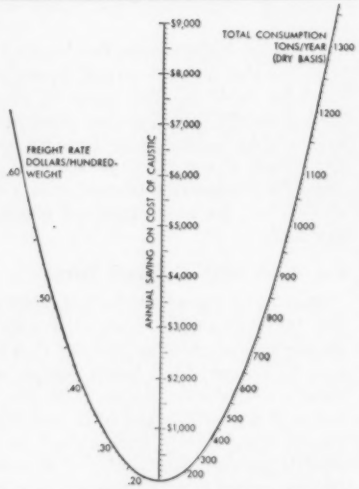

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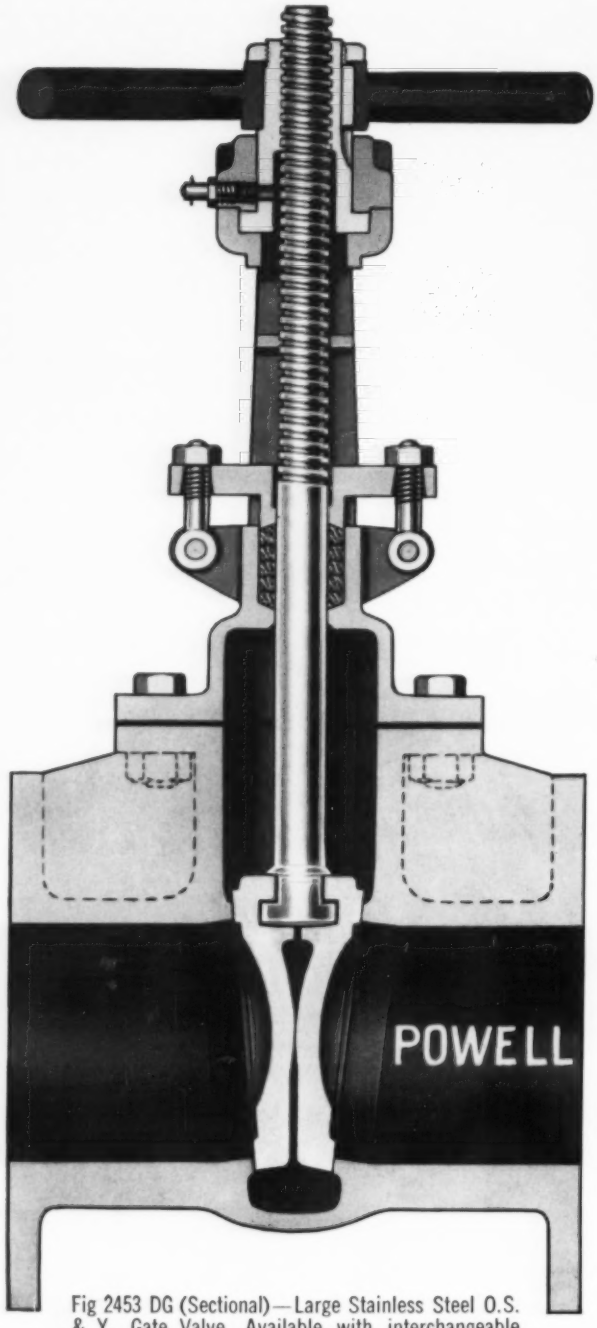

Fig 2453 DG (Sectional)—Large Stainless Steel O.S. & Y., Gate Valve. Available with interchangeable solid or split wedges. Wedges are fully guided throughout their travel.

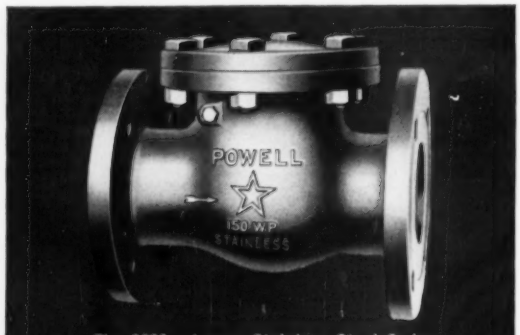

Fig. 2633—Large, Stainless Steel Swing Check Valve for 150 W.P. Sizes, 2" to 12".

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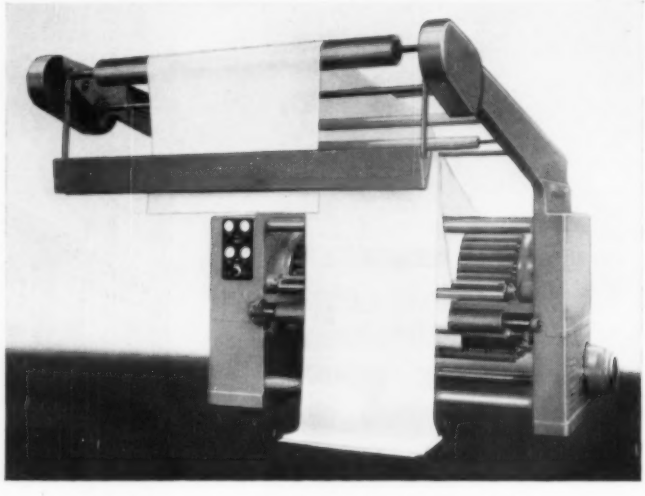
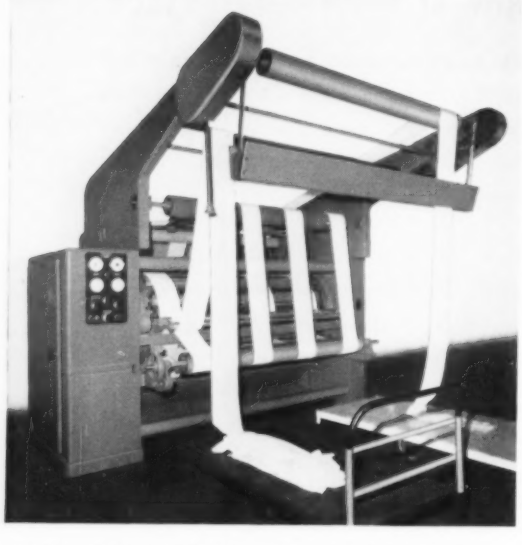


Double Acting Hi-Torc Combination Knit Goods Napper



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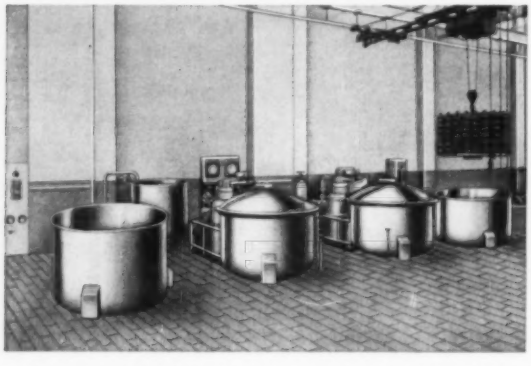
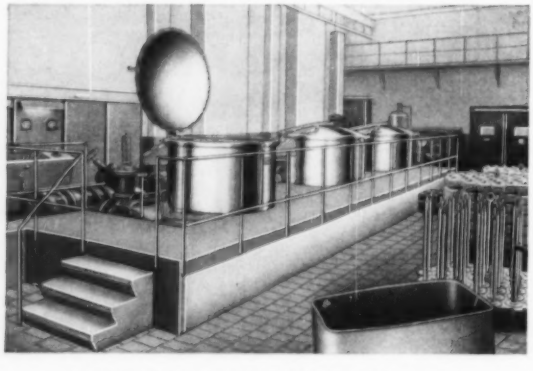


Up-to-date KRANTZ High Temperature Dyeing Plant



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KRANTZ Rapid Dryers

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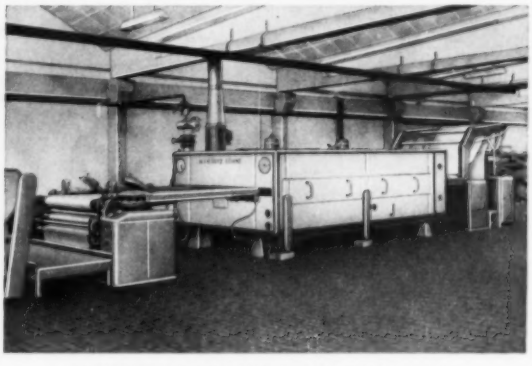

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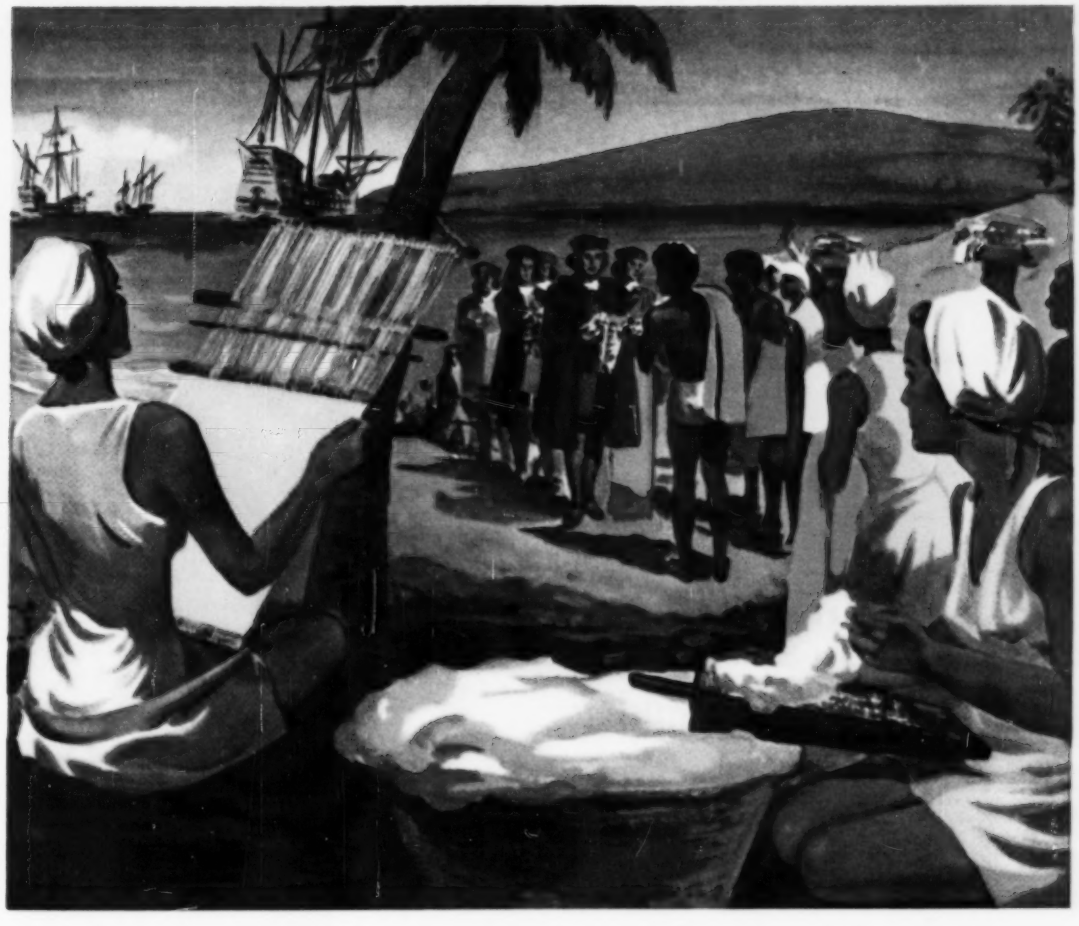

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Yes, you can very profitably increase your output of "perfects" . . . convert soiled, spotted fabrics to rolls of spanking cleanliness . . . simply by adding special textile formula d-2 LESTOIL to your scouring solution.

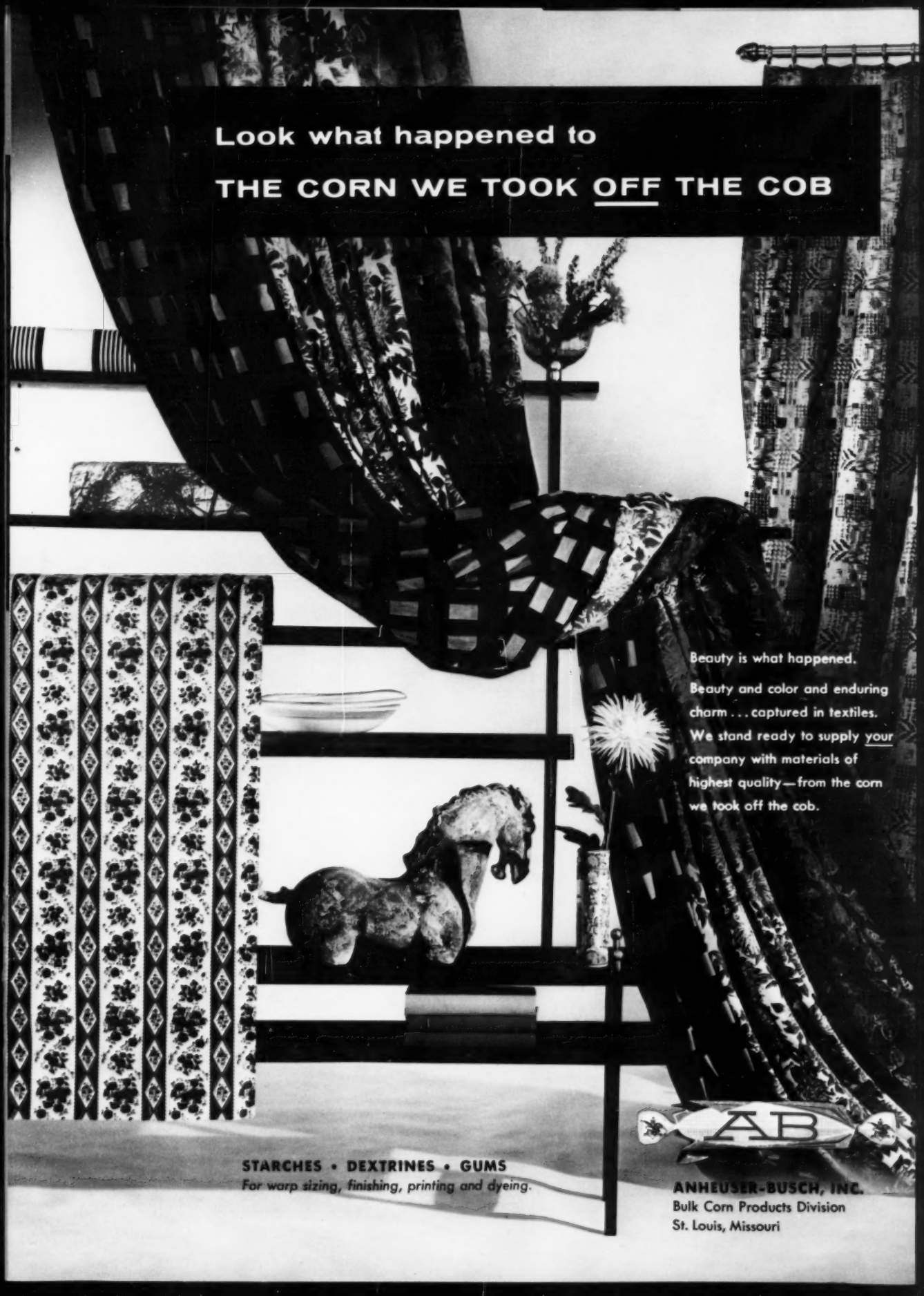
d-2 LESTOIL removes grease, oil, graphite, natural waxes and gums, soluble sizing, mill dirt . . . all the soils that cause "seconds". You need no new equipment or process changes and LESTOIL can be used with confidence on wool, silk and synthetic fabrics.

d-2 LESTOIL rinses out easily, completely . . . prevents redeposition of soil . . . makes fabric fibers soft and pliable and insures uniform bleaching and dyeing. Economically too!

A generous free sample and complete information is yours for the asking. Write today!

LESTOIL, INC. HOLYOKE, MASS.

a subsidiary of Adell Chemical Co.


Look what happened to
THE CORN WE TOOK OFF THE COB
Beauty is what happened.
Beauty and color and enduring charm . . . captured in textiles. We stand ready to supply your company with materials of highest quality—from the corn we took off the cob.
AB
STARCHES • DEXTRINES • GUMS
For warp sizing, finishing, printing and dyeing.
ANHEUSER-BUSCH, INC.
Bulk Corn Products Division
St. Louis, Missouri

you have to run awful fast . . . just to stand still

The Red Queen to Alice—"Through the Looking Glass"

COMPETITIVE BUSINESS demands fast delivery, top quality, smart pricing . . . a market in which you have to run awful fast just to stand still.

In many mills, all the preliminary work required to produce a piece of goods has to go through final finishing and inspection. Much of this work is done on modern machines, but because the finishing department is a necessary expense . . . small, dollar-wise, compared to spin-weave departments . . . machines for finishing and methods of inspecting are still antiquated.

Take a look at your finishing program.

Perhaps here you can really make a wise investment in machinery which can save on costly labor and produce better finished goods.

Just remember — it's how *you* finish that counts.

A modern cloth finishing room can make it possible for you to run fast enough to win with a more profitable margin.

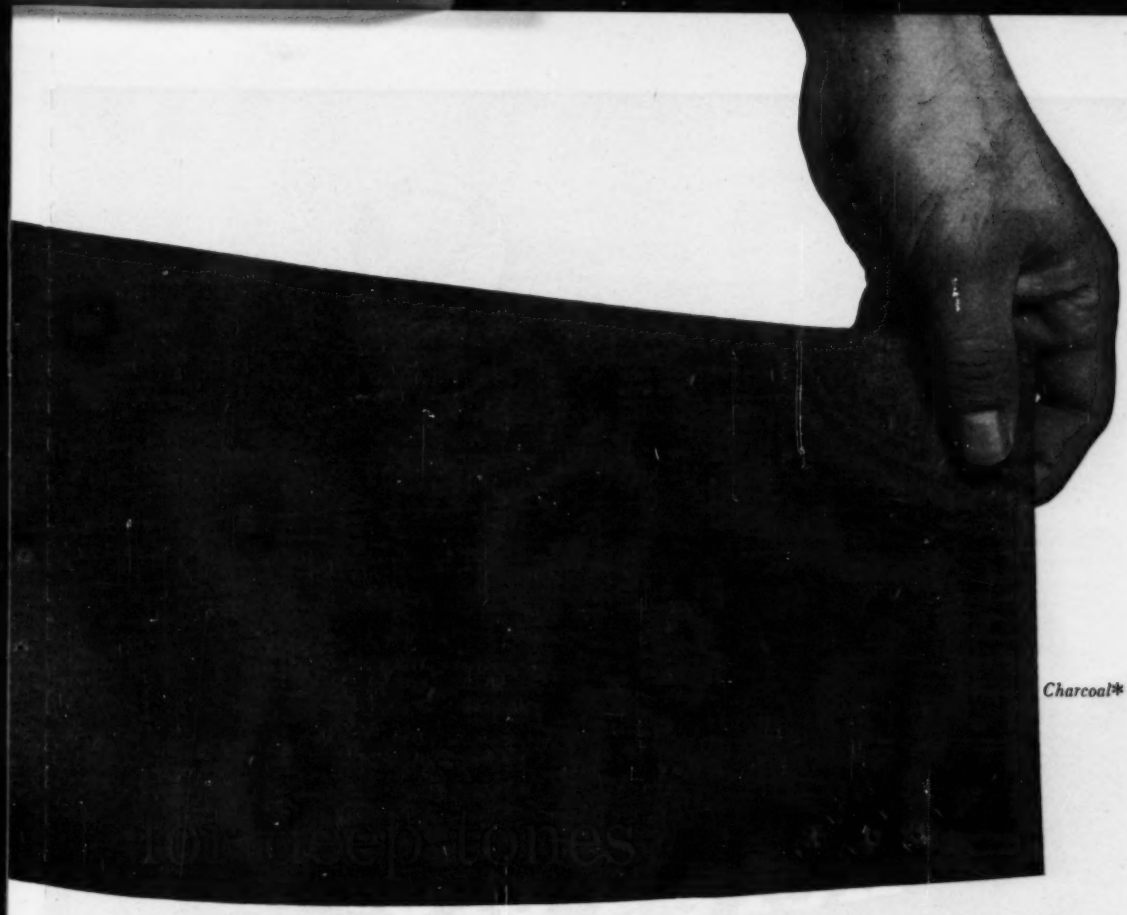
MANUFACTURERS OF A COMPLETE LINE OF DRY FINISHING MACHINERY

CURTIS & MARBLE MACHINE CO.

72 CAMBRIDGE STREET • WORCESTER 3, MASSACHUSETTS

ESTABLISHED 1831

SOUTHERN SALES & SERVICE • LAURENS ROAD • GREENVILLE, SOUTH CAROLINA



*Charcoal**

# of outstanding fastness

Eastman Polyester Dyes

Darker shades of polyester fabrics and their blends are more in demand than ever.

In step with this trend, Eastman offers an expanding series of polyester dyes, *providing the best all 'round fastness characteristics of polyester dyes currently available.*

Specifically developed for use with polyester fibers, Eastman Polyester Dyes exhibit outstanding fastness to washing, light, sublimation, crocking, perspiration, dry cleaning and wet pressing.

Equally important are their excellent processing characteristics...good build-up, good exhaustion and outstanding leveling properties. Thus, darker shades of navy, brown and grey are economically obtained.

Dyeing with Eastman Polyester Dyes is easily accomplished with carriers or under pressure at elevated temperatures. Fibers can be readily dyed in tow, tops, stock, or fabric forms. Fabrics of polyester filament can be conveniently dyed in jigs. Fabrics woven of spun polyester yarns alone or blended with cotton, viscose or wool can be easily dyed in dye-becks.

Make sure you are taking full advantage of this outstanding line of polyester dyes.

*Try this formula on your next charcoal grey dye lot.

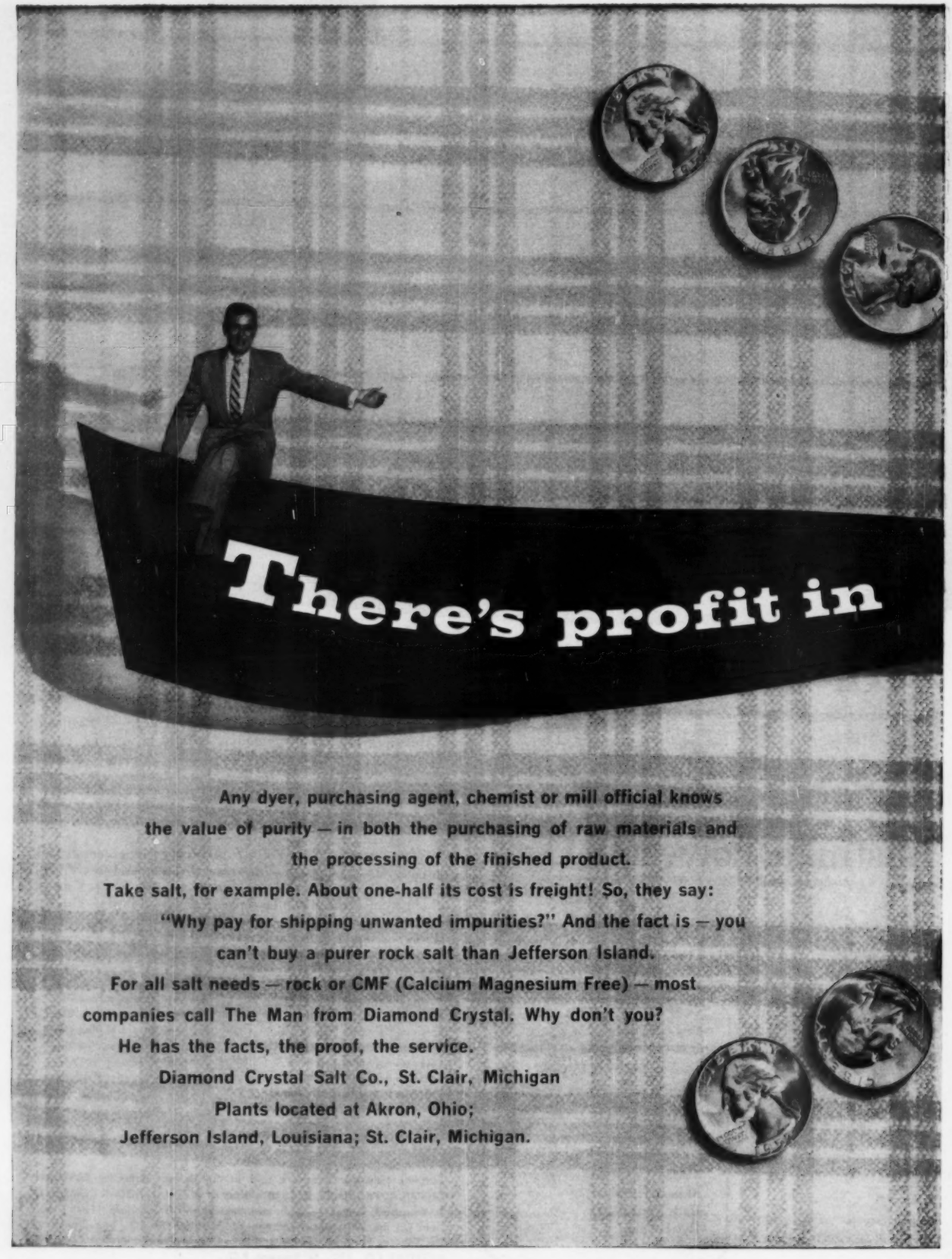
2.5% Eastman Polyester Blue 3RL
3.3% Eastman Polyester Blue BLF
0.9% Eastman Polyester Orange 3RLN
5 g./l. o-phenyl phenol type carrier
Material: Polyester
Bath Ratio: 30:1
Dyed at Boil

Eastman Polyester Yellow RL
Eastman Polyester Yellow W
Eastman Polyester Yellow 5R
Eastman Polyester Orange 3RLN
Eastman Polyester Red B
Eastman Polyester Red 2G
Eastman Polyester Dark Red FL
Eastman Polyester Blue GR
Eastman Polyester Blue GLF
Eastman Polyester Blue BLF
Eastman Polyester Blue 3RL
Eastman Polyester Navy G
Eastman Polyester Black RB

Eastman Polyester Dyes

Eastman Polyester Dyes are sold in the United States by **EASTMAN CHEMICAL PRODUCTS, INC.**, subsidiary of EASTMAN KODAK COMPANY, in Kingsport, Tennessee; Lodi, New Jersey; and Greensboro, North Carolina. On the **West Coast** through WILSON MEYER CO., San Francisco, Los Angeles, Portland, Seattle, Salt Lake City. In **Canada** through CLOUGH DYESTUFF CO., LTD., St. Laurent, P.Q.

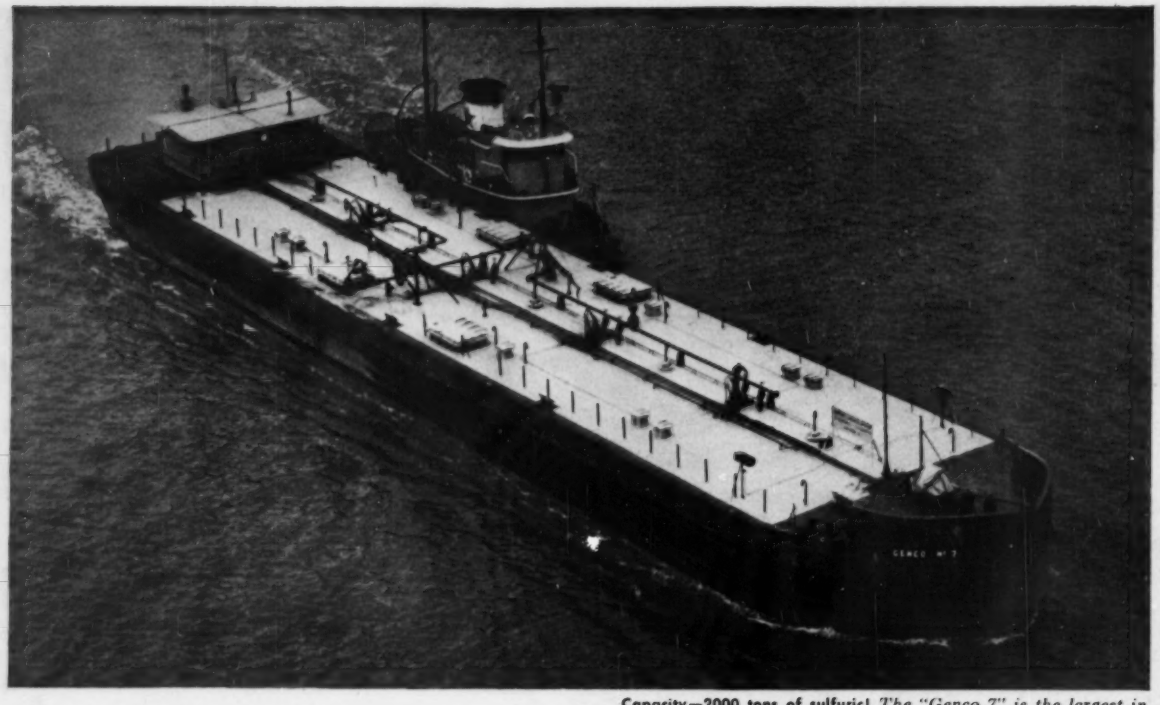
CIRCLE 149 ON READER SERVICE CARD


There's profit in
Any dyer, purchasing agent, chemist or mill official knows the value of purity — in both the purchasing of raw materials and the processing of the finished product.
Take salt, for example. About one-half its cost is freight! So, they say: "Why pay for shipping unwanted impurities?" And the fact is — you can't buy a purer rock salt than Jefferson Island.
For all salt needs — rock or CMF (Calcium Magnesium Free) — most companies call The Man from Diamond Crystal. Why don't you?
He has the facts, the proof, the service.
Diamond Crystal Salt Co., St. Clair, Michigan
Plants located at Akron, Ohio;
Jefferson Island, Louisiana; St. Clair, Michigan.

Jefferson Island DIV.

DIAMOND CRYSTAL SALT CO.

CIRCLE 151 ON READER SERVICE CARD 151



Capacity—2000 tons of sulfuric! *The "Genco 7" is the largest in General Chemical's fleet of eight sulfuric acid barges.*

Call on **GENERAL CHEMICAL** for ***Sulfuric Acid*** ...*As you need it!* ...*When you need it!* ...*Where you need it!*

Whether your sulfuric acid requirements are measured in thousands of tons or carboy lots, General Chemical is best equipped to handle your order.

General's extensive network of production facilities plus its large and flexible transportation system assures you of sulfuric as you need it . . . when you need it . . . where you need it!

For example, we have eight sulfuric barges serving customers along the Atlantic coast and on inland waterways. Three operate out of Marcus Hook (Philadelphia), Pa. Two in the New York City area, including the 2000-ton capacity "Genco 7" shown above. Three on inland waterways. General also operates the largest fleets of sulfuric tank cars and tank trucks in the country.

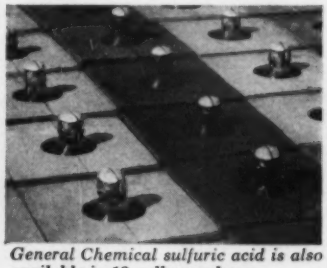
General Chemical has 21 sulfuric plants,* as well as stock points in key industrial centers across the country. Each is geared to meet regional requirements, offering customers the advantages of "next door" location to General's modern facilities. In addition, the output of one plant backs up that of another, making a coast-to-coast supply line which proves invaluable in meeting emergencies or unexpected demands.

Why not find out how our long experience and extensive facilities can benefit you? For further information, write or phone the nearest General Chemical sales office.

**In Canada: Allied Chemical Canada, Limited*

Large fleets of tank transports provide fast over-the-highway service.

By far the largest fleet of sulfuric tank cars is operated by General Chemical.



General Chemical sulfuric acid is also available in 13-gallon carboys.

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

A TEXTILE WORLD Refresher

The Basic Chemistry Of Dyes and Dyeing—VII

- The three principal groups of ingrain colors
- Pigment colors
- Solvent-soluble dyes
- Fluorescent brighteners
- Developing and reducing agents

By **WILLIAM POSTMAN, Ph.D.,** Asst. Professor of Textile Chemistry and Dyeing
A. French Textile School, Georgia Institute of Technology

INGRAIN DYES

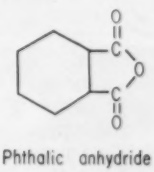
INGRAIN DYES in general are those dyes that are formed *in situ* in the fibers; the term is applicable to any dye formed in a textile fiber from intermediates that in themselves are not true dyestuffs. The Colour Index groups the dyes formed in this manner (or the intermediates from which they are prepared) into three major categories: ingrain dyes, azoic dyes, and oxidation bases.

The first category, ingrain dyes, contains only five members, two of which are phthalocyanine derivatives. The word "phthalocyanine" was coined from the name of the principal chemical intermediate from which these compounds are obtained (phthalic anhydride) and the word "cyanine," which refers to the bluish-green color of the products obtained when this nucleus is combined with certain metals.

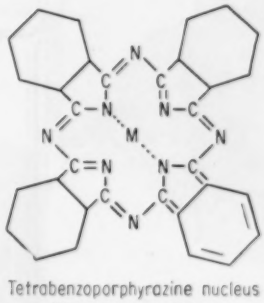
The phthalocyanine nucleus is the most recently discovered (1907) chromophoric group. At first, only phthalocyanine pigments were available. Later it was found that under suitable conditions some of the phthalocyanines could be vatted and therefore applied as vat dyes.

Methods for introducing various groups into the phthalocyanine nucleus, which confer dyeing properties upon the molecule, were then developed; and finally methods for forming the dye on the fiber from its intermediates were devised. Metal phthalocyanines formed on the fiber are listed as ingrain dyes in the Colour Index.

Dyes and pigments from metal phthalocyanines possess excellent fastness properties.

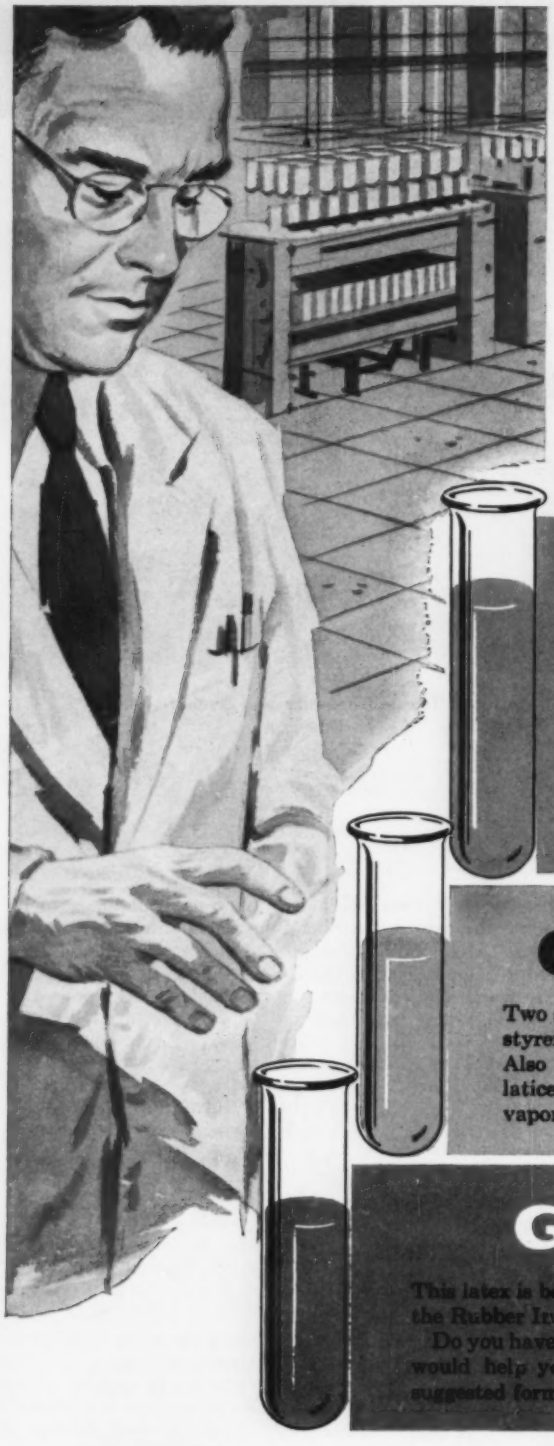


Phthalic anhydride



Tetrabenzoporphyrazine nucleus
Metal phthalocyanine
(M is a metal atom)

This seven-part Refresher is being reprinted in booklets. Copies will be available in about two weeks. Prices: 1 to 15 copies, $1 each; 16 to 30 copies, 75¢ each; over 30 copies, 60¢ each.



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Chemical Division
The Originators of Gen-Tac Latex

which has been used by the Textile Industry for years in the treatment of fabrics for the Rubber Industry

Introduces
TOP-QUALITY LATICES
FOR THE

TEXTILE INDUSTRY

ACRI-FLO

Two styrene-acrylic latices with outstanding UV-heat and light stability, adhesion and pigment binding properties. Developed for the Paint Industry for exterior coatings where these properties have been demonstrated. A point of additional interest to the Textile Industry may also be their extremely small particle size, which provides excellent saturating and pigment binding properties.

Can these advantages be put to work for you?

GEN-FLO

Two styrene-butadiene latices, containing 60 and 67 per cent styrene, having good hardening properties in latex compounds. Also used as a vehicle in Textile Printing Inks. Gen-Flo latices provide above-average water resistance and moisture-vapor transmission characteristics.

GEN-TAC

This latex is being utilized in the treatment of all types of fabrics used by the Rubber Industry, providing optimum adhesion to rubber.

Do you have applications in which such outstanding adhesive qualities would help you? Our technical service staff will be glad to submit suggested formulations and assist in application problems.

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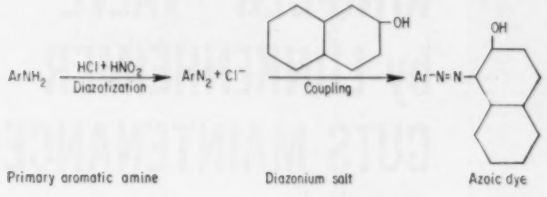
Creating Progress Through Chemistry

AZOIC DYES

In the section dealing with direct dyes, it was pointed out that a compound containing an amino group attached to an aromatic ring (a primary aromatic amine) could be diazotized and coupled with a suitable coupling component to form a new chemical compound containing an azo linkage:



This series of reactions is used to produce, on textile fibers, water-insoluble dyes containing an azo chromophore. Dyes that are formed in this manner (*in situ*) are referred to as azoic dyes. The Colour Index lists the primary aromatic amines used for this purpose as C. I. azoic diazo components; the coupling compounds (frequently called naphthols) are listed as C. I. azoic coupling components.

The azoic diazo components are available to the dyer in two forms: (1) as fast bases, the primary aromatic amines ($ArNH_2$) or the salts of the amines formed by reaction of the free bases ($ArNH_2$) with hydrochloric ($ArNH_3^+Cl^-$) or sulfuric acid; and (2) as fast salts, that is, as fast bases that have been diazotized and stabilized.

Note the special use of the word "salt" here. A "fast salt" is a stabilized diazonium salt. This use of the word "salt" in "fast salt" should not be confused with the term that is used to indicate the product of reaction of an acid with a base, for example, $ArNH_3^+Cl^-$, a diazonium salt ($ArN_2^+Cl^-$), or common salt, NaCl.

How Azoic Colors Are Formed

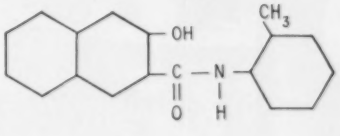
The azoic colors are formed on cellulosic fibers as follows:

1. The water-insoluble azoic coupling component (naphthol) is dissolved in caustic soda and applied to the fabric. The process is called naphtholation.
2. Excess coupling component is usually removed by squeezing, centrifuging, or rinsing with an alkaline salt solution.
3. A diazonium-salt solution from either a fast base or a fast salt is then applied. The fast salt need only be dissolved in water to prepare the diazonium-salt solution; a base must be diazotized (treated with nitrous acid in the presence of HCl or H_2SO_4). The diazonium-salt solution reacts with the naphtholated fibers. In this step, coupling occurs and the insoluble azo dye is formed on the fibers.
4. Rinsing and soaping follow as a necessary aftertreatment and consists of boiling the dyed fibers in an alkaline soap solution. This final step removes loose surface color and develops the final desired hue and fastness properties of the dyeing.

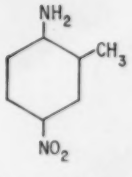
STABILIZED AZOIC COMPOUNDS

In addition to the diazo and coupling components, the Colour Index also includes a third group under the general heading of Azoic compositions. These are mechanical mixtures of coupling and azoic components in which the azoic component has been diazotized and stabilized so as to prevent coupling until desired. The colors of these azoic compositions, which are used mainly in printing, are developed by subjecting the print to the action of steam and/or acid. The heat or acid reactivates the stabilized diazonium salt, which then couples with the naphthol to form the color on the fiber.

C. I. Azoic Red 16 is an example of an azoic composition; it is a mixture of C. I. Azoic Coupling Component 18 and diazotized and stabilized C. I. Azoic Diazo Component 34. Coupling Component 18 is also known as Naphthol AS-D or by other names given it by the various manufacturers. C. I. Azoic Diazo Component 34 is also referred to as Fast Red RL Base; the stabilized diazonium salt from this base as Fast Red RL Salt:



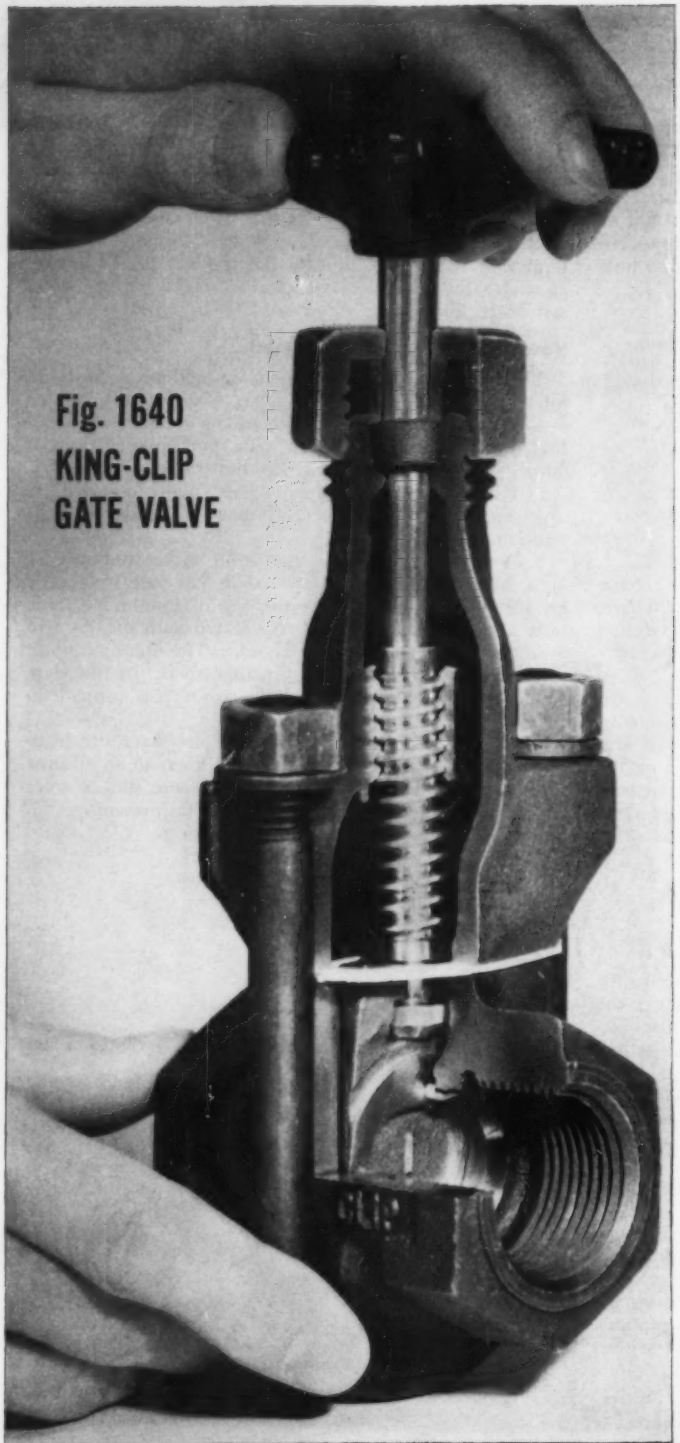
Naphthol AS-D
C.I. Azoic Coupling Component 18



Fast Red RL Base
C.I. Azoic Diazo Component 34
Fast Red RL Salt (when diazotized and stabilized)

OXIDATION BASES

Aniline black is the classic and most important example of an ingrain color formed by oxidation of an organic base. This extremely fast black dye may be formed by a variety of methods, one of which employs a mixture of aniline, aniline salt (aniline hydrochloride), potassium ferrocyanide ($K_4Fe(CN)_6$), and sodium cholorate ($NaClO_3$). This mixture is applied to the goods, dried, aged (heated), chromed, and soaped. Aniline black is used mainly for



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Feature-for-feature, it's easy to *see* why King-Clip outperforms other clip valves . . . keeps maintenance costs low. Its precision-machined *Stemalloy® stem* assures longer stem thread life. *Seats and discs* are precision fitted to assure tight closure, even through thick liquids. *Extra-long pipe threads* extend deep into the body for pressure-tight connections. *Bodies* are rigid and extra-sturdy. And the exclusive *Non-Slip® handwheel* makes opening and closing easy—even with wet or oily hands.

Your Lunkenheimer Distributor will be glad to show you the important differences between King-Clip and other clip valves. He will arrange a comparison test that will show why King-Clip cuts maintenance costs . . . assures longer-lasting service. Or write The Lunkenheimer Co., Cincinnati 14, Ohio.

LUNKENHEIMER QUALITY

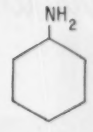
LUNKENHEIMER®

THE ONE *Great* NAME IN VALVES

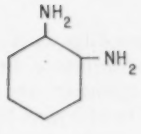
coloring cellulosic fibers such as cotton, viscose, and linen.

The success of the aniline black process led to a search for other organic bases that could be used to produce colors on textile fibers in a similar manner. Other bases, which find limited use for dyeing cellulosic fibers as well as furs, are also available.

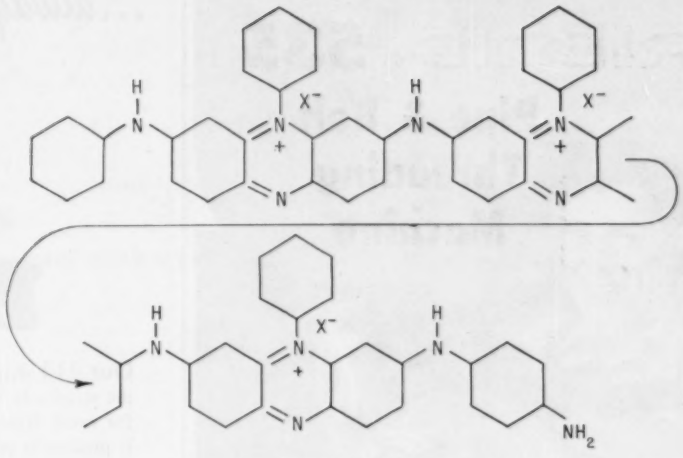
The organic bases used to form ingrain colors by oxidation on the fibers are called oxidation bases.



Aniline
C.I. Oxidation Base 1



C.I. Oxidation Base 16



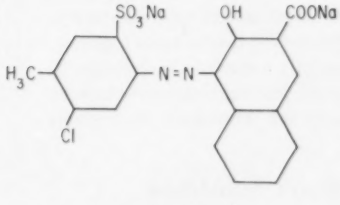
Aniline Black
X^- = acid radical, probably $CrO_4^=$ in chromed black

PIGMENT COLORS

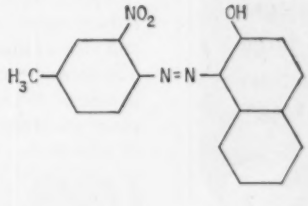
The term "pigments" include inorganic as well as organic compounds that are used for coloring a variety of substances. Paints and lacquers, printing inks, linoleum, textile fibers (by mass coloration during the process of manufacture), paper, soaps, cosmetics, and glass may be colored by means of pigments.

Various types of pigments that are insoluble or only sparingly soluble in a range of solvents are used. These include:

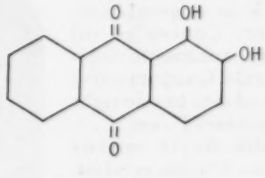
1. Organic pigments, of which C. I. Pigment Red 3 is an example.
2. Inorganic pigments, such as C. I. Pigment Yellow 34, which is lead chromate.
3. Pigments that are formed by reaction between the soluble salt of a metal (calcium, barium, or manganese) and a soluble acid dye such as C. I. Pigment 48, an acid dye manufactured solely for this purpose. Dye-metal complexes formed in this manner are called lakes. A number of acid dyes that are used as textile dyestuffs are also used as pigments in their insoluble (lake) dye-metal complex form.
4. Lakes of basic dyes, formed by reaction with soluble salts of various acids.
5. Mordant dye lakes such as Alizarin (C. I. Mordant Red 11) precipitated with aluminum, calcium, or iron.
6. Various metals (aluminum, copper, gold, lead, tin, and zinc) used at pigments. These are included in the Colour Index as Pigment Metals. For example, metallic gold is listed as C. I. Pigment Metal 3; copper is listed as Pigment Metal 2.



C.I. Pigment Red 48



C.I. Pigment Red 3



Alizarin
C.I. Mordant Red 11
C.I. Pigment Red 83
(when combined with a metal)

SOLVENT-SOLUBLE DYES

This category includes those dyestuffs that are soluble in organic solvents and are used for such purposes as coloring oils, fats, and waxes; and in inks for ball-point pens and typewriter ribbons.

It will be recalled that the water solubility of dyestuff molecules is associated with the presence of sulfonic-acid groups as sodium salts ($-SO_3Na$) or with salts of basic amino groups ($-NH_3^+Cl^-$). Solubility in organic solvents is desired for the solvent dyes, but they should be insoluble in water. Therefore, those acid dyes that are

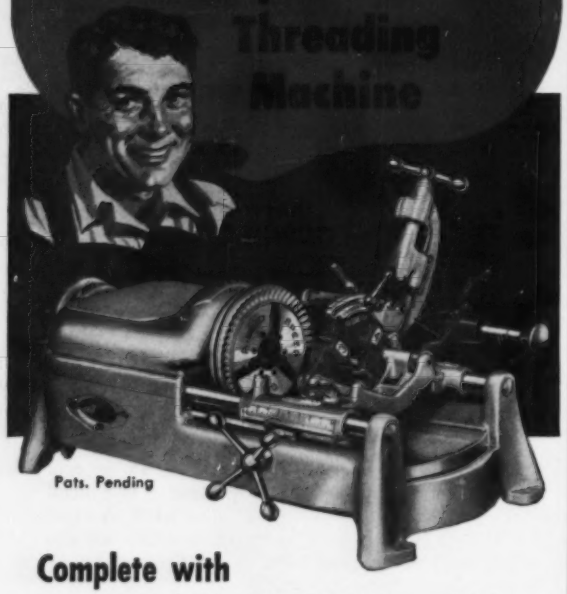
Checked 'em all . . . got

Far More for My Money

when I bought this terrific new

RIDGID 535

Pipe & Bolt Threading Machine



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Complete with 1 Universal Die Head, 2 Sets of Dies for ½" to 2" pipe or conduit

Looks good, does better. Perfect cutting, reaming, threading fast . . . and easy! Three tools operate independently . . . swing up out of the way for short pipe chucking from front. Slip-proof Speed Chuck is a great performer. Concealed oil system, automatic shut-off nozzle. Quick-opening die head sets to size right in machine. Power?. . . RIDGID-built motor handles 2" pipe, conduit, bolt, rod—and 12" geared tools easily. Try it, compare it . . . and you'll understand its enormous popularity! Leg and wheel stands available. At your Supply House.

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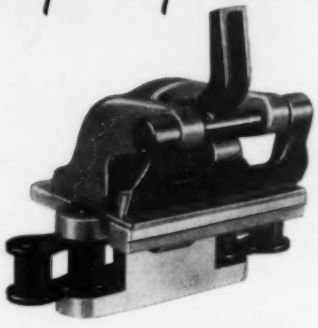
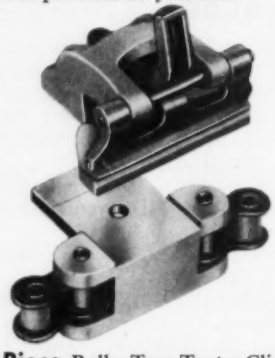
M&W

Roller Type Tenter Clips

. . . always 20 years ahead!



Our #11 Roller Type Tenter Clip universally sets the standards for roller clip performance. Engineered for every type of operation, equipment and fabric, it is precise in performance up to 250 ypm, has exceptionally long life at high speeds. We originated, patented and introduced the basic design 20 years ago — and constantly improve both design and materials to maintain our priceless 20-year lead.



Our Two-Piece Roller Type Tenter Clip is a typical M&W innovation — only clip of its type available in two-piece construction to eliminate down time, greatly reduce repair costs. A single socket-head cap screw and lock washer rigidly hold the two sections together. Top section can be promptly removed (and replaced) in case of damage or wear, leaving bottom of chain in place on frame — ready for immediate resumption of operation.

5148

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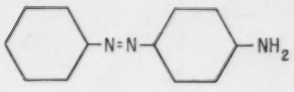
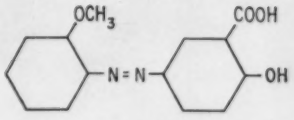
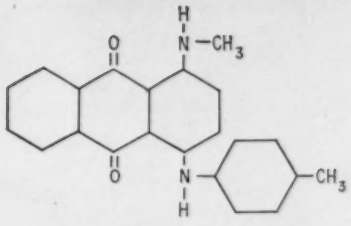
marketed as solvent dyes are supplied as the free acid (COOH, not COONa as in C.I. Solvent Yellow 20, for example), and basic dyes as the free base (C.I. Solvent Yellow 1). Water-solubilizing sulfonic-acid groups are usually absent in dyes of this class.



C.I. Solvent Yellow 1



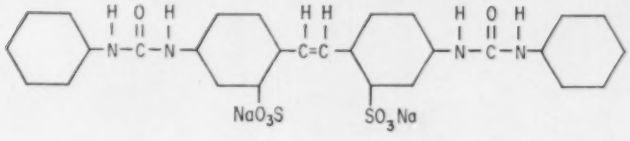
C.I. Solvent Yellow 20



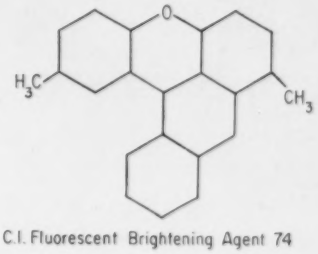
C.I. Solvent Blue 11

FLUORESCENT BRIGHTENING AGENTS

Fluorescent brightening agents are essentially colorless compounds that fluoresce blue under the influence of ultraviolet light. They are used instead of blue dyes or bluing to improve the whiteness of textile materials. Paper and textile manufacturers use these compounds to improve the whiteness of their products; and their incorporation in soaps and detergents for household use is now a generally accepted practice.



C.I. Fluorescent Brightening Agent 30



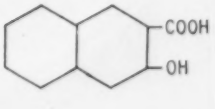
C.I. Fluorescent Brightening Agent 74

IMPORTANT AUXILIARY CHEMICALS

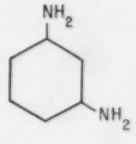
Developers

It will be recalled that many dyes, particularly direct and acetate dyes, can be diazotized on the fiber and coupled with a suitable coupling component to increase the size of the original molecule. This process is frequently referred to as developing and the final result as a developed dye; the coupling components used for this purpose are called developers.

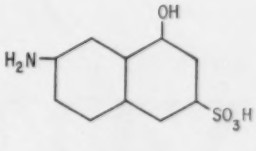
A total of 16 developers is included in the Colour Index. Among these are C. I. Developer 8, a hydroxy-containing compound; C. I. Developer 11, a diamine; and C. I. Developer 3, a compound containing both a hydroxy and an amino group.



C.I. Developer 8



C.I. Developer 11



C.I. Developer 3

Reducing Agents

Although these chemicals are not dyes, they are important to the production of vat dyes and some types of prints.

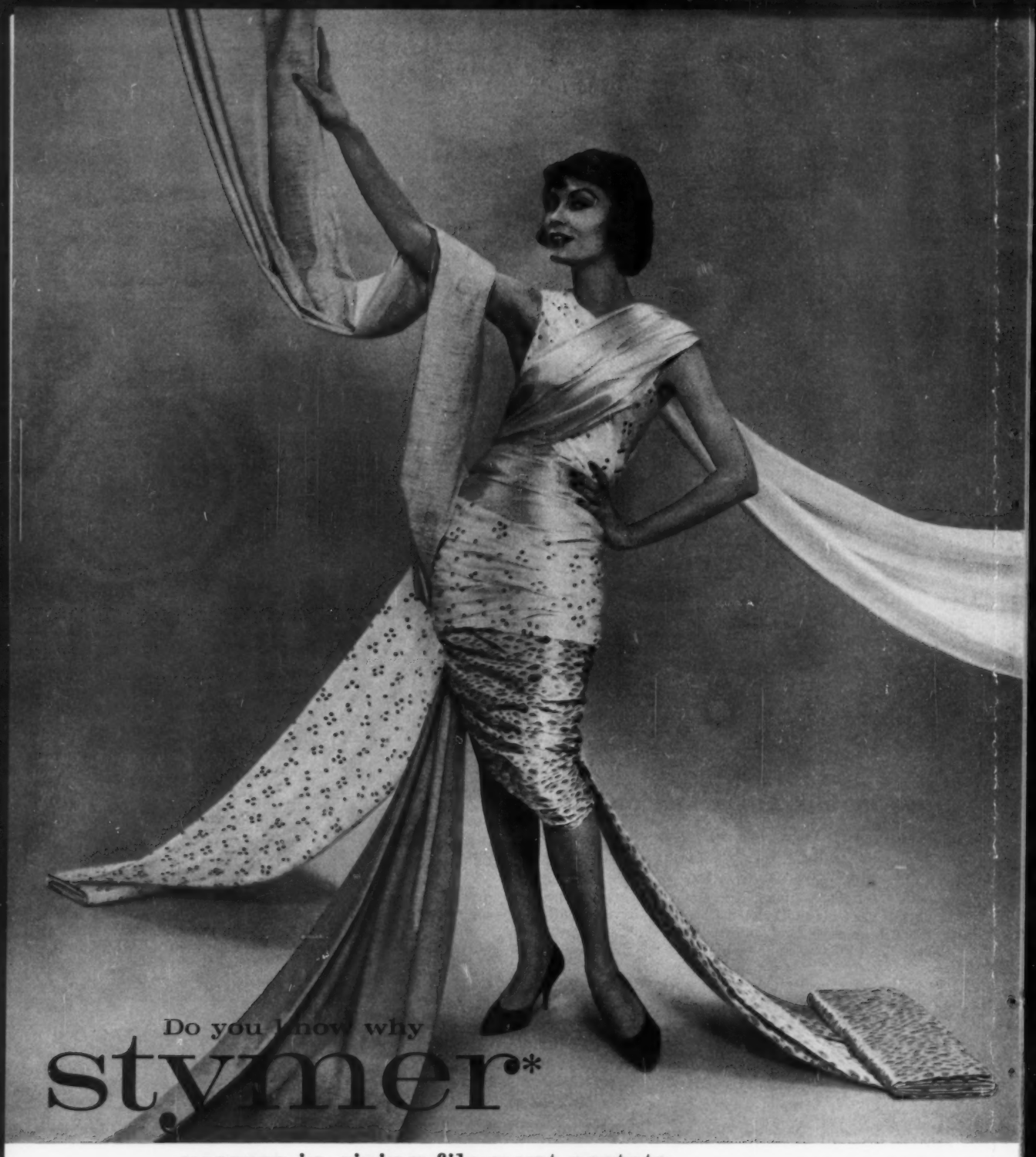
The four most-used reducing agents are based on dithionates or sulfoxylates.

Sodium dithionate, usually called sodium hydrosulfite or hydro, has the formula $Na_2S_2O_4$ and is valuable for reducing vat colors and as a stripping agent for dyed cellulosic fibers.

Sodium sulfoxylate formaldehyde, $NaHSO_2 \cdot CH_2O \cdot 2H_2O$ finds use in discharge printing and in stripping colors from protein fibers.

Zinc sulfoxylate formaldehyde, $Zn(OH)HSO_2CH_2O$, is soluble only in acid solutions and is valuable in stripping out colors that do not respond well to hydro.

A water-soluble form of zinc sulfoxylate formaldehyde, $Zn(HSO_2 \cdot CH_2O)_2$, is used to strip colors and in the discharge printing of cellulose acetate and nylon fabrics.



success in sizing filament acetate can be measured

by the billions? Stymer S has contributed to the successful weaving of billions of yards of fine taffetas, twills, French crepes, tissue failles, satins and shantungs. This synthetic resin size has unusual uniformity, toughness, and flexibility. Its non-souring stability permits large batches to be made up at one time. Stymer S solutions don't gel when cold, won't clog pipes or valves. Leasing in the size is standard practice. Slashing is clean and efficient. De-sizing is easy and complete even with long-stored cloth. For complete technical data, samples, and cost-saving facts, write to Monsanto Chemical Company, Plastics Division, Room 1215, Springfield 2, Massachusetts.

*STYMER, RESLOOM, LYTRON: REG. U.S. PAT. OFF.

Monsanto

Other Monsanto textile chemicals: Resloom* E-63 chlorine resistant resin; Resloom E-50 cyclic urea resin; Resloom HP and M-75 melamine resins; AC catalysts; Lytron* Polystyrene latices

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HARSHAW UVERSOFT "D"

imparts soft hand with little reduction in moisture absorbency

● UVERSOFT "D" is a cationic surface active agent which produces a full, soft hand with little, if any, reduction in moisture absorbency of the TREATED material. It can be exhausted from a long bath, and has an excellent retention in an aqueous system. UVERSOFT "D" provides a maximum economy in application and use.

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Announcing: DYLEX® K-42 latex—a latex that does not require vulcanizing. Here's what that means to you: • Ease of formulation • Wider range of dyestuffs • Extended storage life of completed compound • Elimination of odor problems • Lower drying temperature • No precuring

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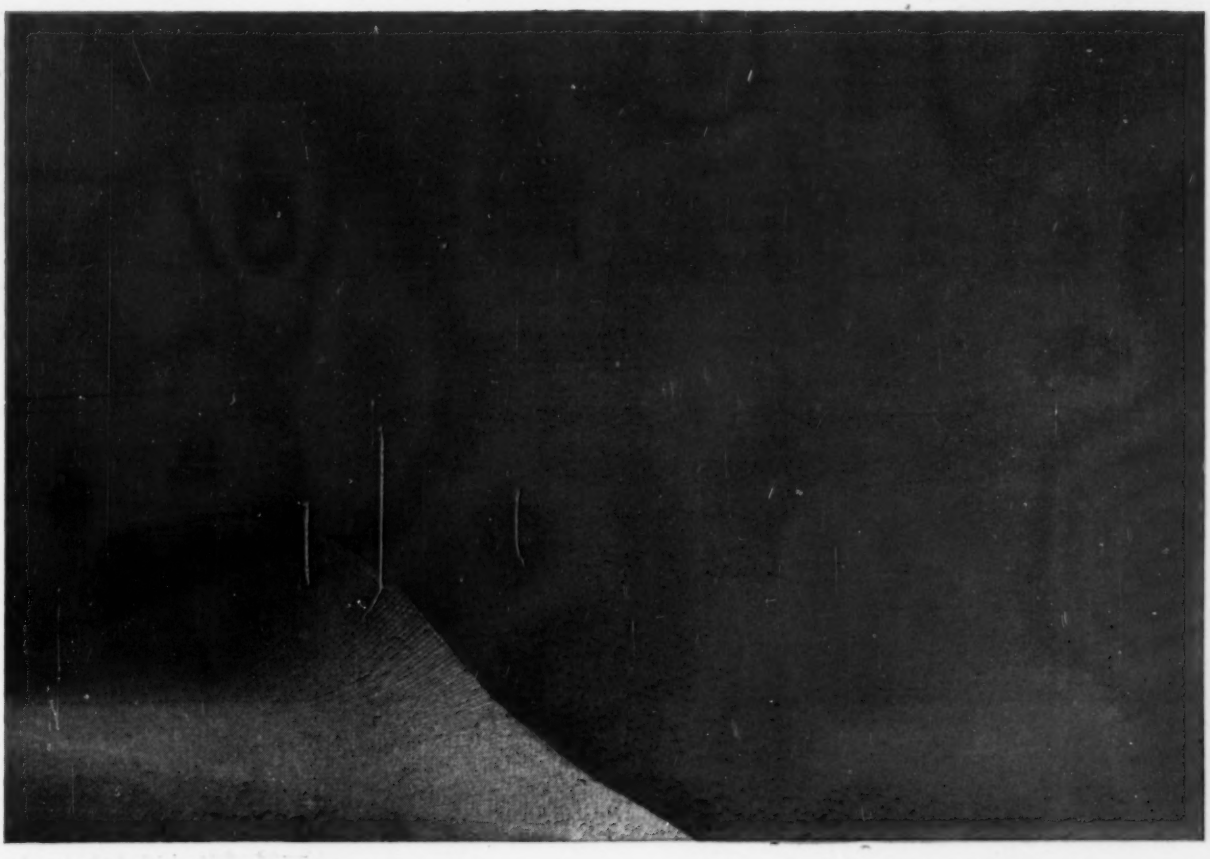
KOPPERS PLASTICS

KOPPERS



#5 in a series reviewing the "reasons-why" for the consumer acceptance of Arnel

ARNEL'S "STAMPS" OF CONSUMER APPROVAL

In previous advertisements in this series we have "ticked off" various aspects of Arnel's outstanding success among today's fibers. One factor that constantly recurs is that of convenience to the consumer.

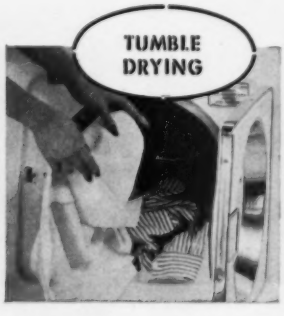
Arnel's ease of handling, processing and styling flexibility are well known to mills and converters. But Arnel's consumer convenience—wash-and-wear, ease-of-care—is what makes the sale—and keeps it sold. Consider the convenience of little or no IRONING.

To the consumer:

1. Many Arnel triacetate fabrics, such as jerseys, require no ironing after machine laundering and extracting. Others require varying degrees of touch-up ironing.
2. Fabrics made of Arnel may be ironed safely at temperatures up to 450° F. without any damage. This corresponds to the average wool—cotton setting on an automatic iron.
3. They may be ironed while dry. A steam iron may also be used.
4. The high heat resistance of fabrics containing Arnel produces excellent resistance to glazing as a result of ironing.
5. All fabrics carrying the official Arnel symbol have been pretested for performance claimed—including safe ironing temperature (Tests are conducted free of charge by the Celanese Corporation of America.

To take advantage of the great consumer acceptance of Arnel, let Celanese work with you to develop new construction in Arnel fabrics. Booklets 12A, 13A and 14A, containing the important technical procedure and facts about Arnel, are available by writing Celanese Corporation of America, Box 1414, Charlotte, N. C. Celanese® Arnel®

District Sales Offices: 180 Madison Ave., New York 16, N. Y.; Room 10-141 Merchandise Mart, Chicago 54, Ill.; Western Merchandise Mart, Room 478, San Francisco, Calif.; P. O. Box 1414, Charlotte 1, N. C.; 200 Boylston St., Chestnut Hill 67, Mass.; 3179 Maple Drive N. E., Atlanta 5, Ga.
Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Ave., New York 16, N. Y.
In Canada: Chemcell Fibres Limited, 1600 Dorchester Street West, Montreal, Quebec



Arnel . . . a

ARNEL*

*This is the official Arnel symbol—evidence that this fabric of this new triacetate fiber has been pre-tested for performance claimed.

Celanese contemporary fiber

9216

'59

PREMIERE: "THE DU PONT SHOW WITH JUNE ALLYSON", CBS-TV

A night to remember. Monday, Sept. 21, at 10:30 PM, EDT, a brand-new dramatic show on 139 CBS-TV stations will help you sell millions of America's best textile customers. Exclusive Du Pont sponsorship. Week after week, viewers from coast to coast will see and hear about the proved performance of Du Pont nylon, "Dacron"* polyester fiber and "Orlon"* acrylic fiber ...keeping them miles ahead in consumer preference. The first show: "Those We Love", a powerful, appealing story starring Miss Allyson, with Ann Harding. Tune in, won't you? You'll enjoy it!

DU PONT NYLON · "ORLON" ACRYLIC FIBER · "DACRON" POLYESTER FIBER
... MILES AHEAD IN CONSUMER PREFERENCE

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Better Things for Better Living . . . *through Chemistry*

*"Dacron" and "Orlon" are Du Pont's registered trademarks.

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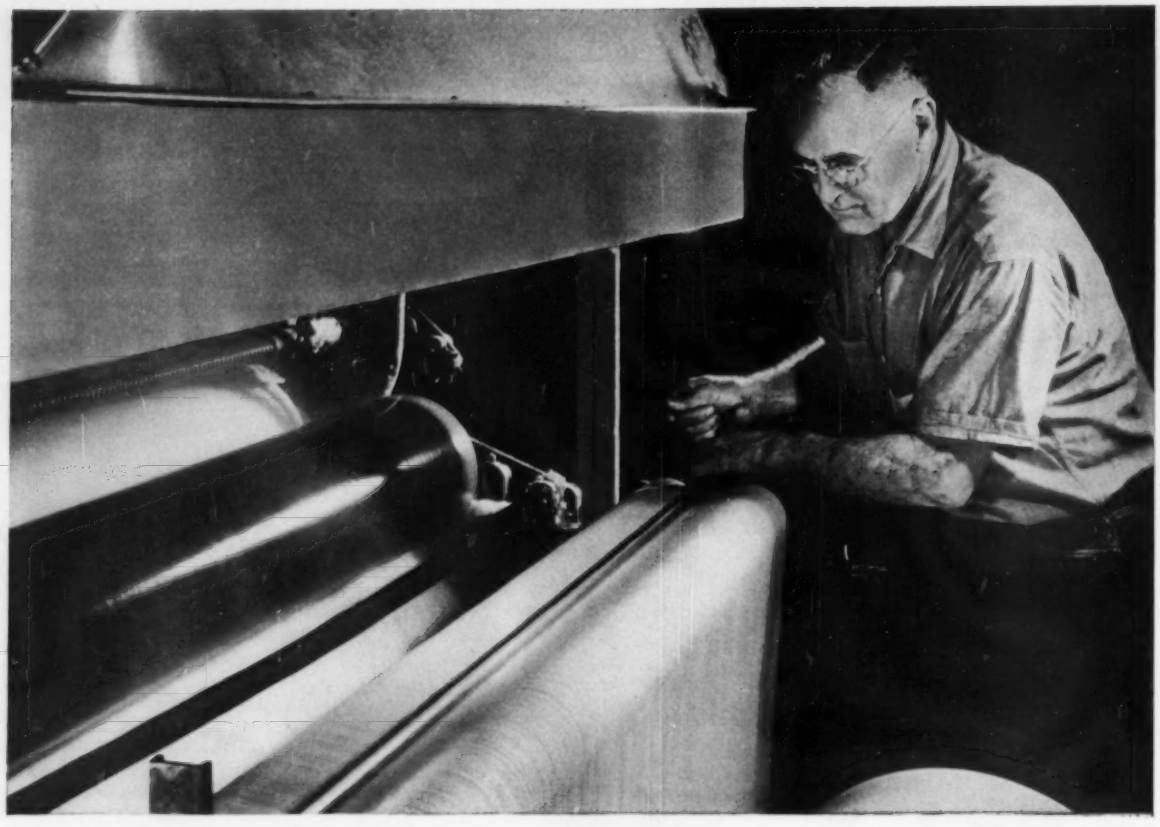


How Modern Mills Improve Slashing Operations

Time after time, mills around the country report greatly improved slashing operations with TEN-O-FILM starches. Compatible with most adjuncts and available in a wide range of fluidities, TEN-O-FILM users praise its many unique operating advantages.

TEN-O-FILM is ready to use after cooking thirty minutes. Many mills find need for less plasticizer than with conventional starches. The stability of TEN-O-FILM keeps size usable despite prolonged heating and cooling. Size made with TEN-O-FILM does not congeal or "skin over" at lower-than-normal temperatures . . . it can be held for reasonable shutdown period without gelation.

TEN-O-FILM offers several additional features including unequalled clarity of film, economy in desizing and dyeing.

Our technical service group has had wide experience and marked success in adapting this versatile starch to the varied needs of many textile applications. The production advantages and process improvements achieved by TEN-O-FILM can be fitted to your needs by consulting our textile technicians. Contact our nearest sales office or write direct.

TEN-O-FILM® starches

Other fine products for the Textile Industry: EAGLE® • FOXHEAD® CLARO® • GLOBE® starches • GLOBE® and EXCELLO® dextrines

CORN PRODUCTS SALES COMPANY 17 BATTERY PLACE, NEW YORK 4, N.Y.

New Cellulosic Fiber

Zantrel, a high-wet-modulus cellulosic fiber, was announced last month by Hartford Fibres Co., Div. of Bigelow-Sanford Carpet Co.

Burlington Industries is now marketing fabrics of 100% Zantrel and of blends with other fibers.

The staple fiber is being made in Europe by four companies that developed it under Japanese patents. Until Hartford's production begins next summer at its Rocky Hill, Conn., plant, it will be the sole selling agent for imported fiber produced by Compagnie Industrielle de Textiles Artificiels et Synthetiques in Gauchy, France.

Hartford is asking the Federal Trade Commission to establish the generic name "polynosic" for Zantrel. FTC has so far refused requests from other producers for a generic term other than "rayon" for cross-linked and high-wet-modulus cellulosics developed in this country.

Properties of Zantrel are:

Breaking tenacity (grams per den.) —3.4 (conditioned), 2.7 (wet); loss in breaking tenacity from conditioned to wet—21%; breaking elongation (%)—10 (conditioned), 12 (wet); wet modulus (elongation at a load of 0.5 gram per den.)—3.1%; wet elastic recovery (from a load of 0.5 gram per den.)—95%; water imbibition—60; degree of swelling—1.35; degree of polymerization—520; loss of strength after 7% caustic treatment—5%.

USDA Study of PA Cotton

Partially acetylated (PA) cotton (cotton in which cellulose hydroxyl is chemically converted to cellulose acetate) has a possible market in the laundry industry, according to a USDA report.

Cotton treated in this way is highly resistant to rot, mildew, heat, and scorch. These properties, especially the last two, make PA cotton potentially useful for such items as ironer covers in commercial and home use.

USDA researchers also report that the cost of partial acetylation would probably be more than offset by increased service life of the cotton.

A free copy of the report, "Potential Markets for Partially Acetylated Cotton," AMS-324, may be obtained from Marketing Information Div., Agricultural Marketing Service, U. S. Dept. of Agriculture, Washington 25, D. C.

New Bemberg-Acetate Fabric

Two new fabrics made from Bemberg's Flaikona and acetate have been added to the "101 Collection" of Penco Fabrics.

Silka-Shan, one of the fabrics, is in solid colors. Shandor is a hand-screened print. Both are available in 101 colors.

Both have a textured silken look and a soft hand. They are available also in quilting.

New Nylon Net Mesh

Fabiok Mills, Inc., developed and is now producing nylon net mesh that is being used as a substitute for wood or metal slats in baby play pens. It lightens the unit for portability and prevents splinters and rust.

The same type of net with a closer mesh is made into swimming-pool covers, lockers for storing work uniforms between shifts in oil refineries, bomb cradles, and other applications for home and industry.

Burlington Evaluates Kodel

Burlington Industries, Inc., is evaluating blends of wool and Kodel for knitting fabrics from yarns spun on the worsted system.

The company feels that characteristics of the Kodel-blended yarns, such as resistance to pilling, good dimensional stability, and good bulking properties, are important factors for knitted fabrics. The low specific gravity of Kodel results in wash-and-wear fabrics with good cover, hand, and appearance. Shrinkage is expected to be easily controlled.

Orlon-Cotton Underwear

The William Carter Co. has expanded production of knitted garments of 80% Orlon and 20% cotton to children's knitted underwear. Previously the company announced the production of Orlon-cotton garments for infants.

Five styles will be available in the children's line: girls' vests and pants, boys' athletic shirts and Tykes pants, and children's T-shirts.

New Dacron-Comiso Fabrics

Artisan Tropicals are new fabrics manufactured by Rhodhiss-Pacific Mills. They are blended of 55% Dacron and 45% Comiso super-high-tenacity rayon.

Box-loom patterns and pick-and-pick weaves are included. The fabrics are treated for wash-and-wear.

King-Size Socks

Jerks Socks-Wovenright is now offering king-size socks to fit men whose stocking size exceeds size 13. The socks are offered in 11 styles.

They are available in sizes 14, 15, and 16 and in wool, Ban-lon, Orlon, nylon, combed, spun, and mercerized cotton, and in blends. Prices range from 55¢ to $1.75 retail.

New Conveyor Belting

United States Rubber Co. introduced a low-cost, high-quality friction surface conveyor belting, called U. S. Indestructible Slab. The new type of belting was designed to operate more efficiently and longer than other friction surfaces.

Full-strength standard cotton duck is used with extra-thick skim coats of natural rubber.

The belting is available in three- or four-ply constructions, in 14 widths

from 4 to 48 ins., and in 250- and 500-ft. rolls.

Knitted-Embroidered Fabric

Associated Mills is producing a new fabric that is embroidered as part of the knitting process. The fabric is being marketed under the trademark Embroiderique.

Embroiderique fabrics can be delivered in full pieces of 100 yds. with the embroidery completely covering the fabric out to both selvages. Perfect color matching between the embroidery and the fabric are possible because they can be dyed together.

The new embroidered fabrics are available in heavy and light weights and in soft and crisp finishes.

Vinyl-Coated Wash-and-Wear

Fabrilite, a new wash-and-wear vinyl-coated sportswear fabric, has been introduced by Du Pont Fabrics Div. It is soft and pliable and has a leather-like appearance.

The medium-weight, elastic fabric is highly resistant to fading, scuffing, soiling and tearing. It is available in many colors.

Cotton Stretch Yarns

Clemson Agricultural College will work under contract from USDA on methods of producing permanently elastic cotton yarns suitable for the manufacture of socks and other knitwear.

Various methods of producing twisted, crimped, looped, or otherwise distorted yarns will be tried; and different finishing compounds will be tested for setting the yarn. Treated yarns will be evaluated for their knitting quality and for durability of their elasticity.

Fire Wall Made of Fabric

A new asbestos-base fabric coated with Viton synthetic rubber and reinforced with wire of Inconel nickel-chromium alloy is being used for fire-wall seals in the wings of the Convair B-58 Hustler. The new material was developed by Raybestos-Manhattan's General Asbestos & Rubber Div.

The fabric, which is 4/100 in. thick and about 3 lbs. per sq. yd., has a minimum strength of 200 lbs. per in. for the warp and 100 lbs. per in. for the filling. It can be kept at 40° F. below zero for 5 hrs. or at 500° F. for 96 hrs. with no tendency to crack on flexing.

New European Collections

PARIS—Bigger sales for the U. S. textile industry are predicted in coming months as a result of last month's showing of fall and winter fashions of the top Paris designers. U. S. buyers bought the longer, looser models in soft fabrics.

Skirt lengths stayed relatively short, but lavish use of fabrics for daytime and evening clothes prevailed throughout the collections.

Wool jersey was a favored fabric for daytime dresses. Silk or wool crepe or a silk-and-wool mixture was favored in cocktail dresses.

Lightweight shetlands, soft muted tweed mixtures, and checked and striped woolens were used for suits.

Coats were fashioned of heavyweight glen plaids, mohairs, vicuna, tweeds, and spongy, hairy, or satin-finish woolens.

For after dark, designers used a whole range of luxury fabrics; but satin proved most popular. Velvets, brocades, chiffons, lamé, silk crepe, lace, and warp-print or plain taffetas were widely used.

Color showed less vibrance than in recent seasons. Black staged a comeback, especially in cocktail and dinner dresses. Other popular colors were white and dark gray for round-the-clock wear. A full range of browns, greens, purples, and autumn colors was shown.

Although definite trends were apparent in a collective view of the shows, emphasis varied with the designer.

•

FLORENCE—A profusion of fabulous fabrics, exciting colors, new trims, and elegance was much in evidence at the 18th Italian Fashion Show last month.

Unlike the Paris collections, hemlines dropped. Designers used many 9/10-length redingotes, middies, and tunics.

The big-belted suit was popular. All jackets were longer, either loose or softly bloused. Collars gained in importance.

Salt and pepper tweeds were favored; and heavy, muted tweeds, flat-surface, heavy and soft woolens, wool and fur blends, broadtail-type wool, reversibles, zibelines, boucle, cashmeres, shetlands, wool crepe, wool and silk blends, and some mohair were used for morning and day clothes, suits, and coats.

Velvet was used extensively for cocktail and evening wear as well as sheers and heavy fabrics such as embossed and heavy satins, metallics, brocades, chiffon, lace, chantilly, organza, and a new fabric called organza lace. Classic silk fabrics were also used.

Colorwise, black and white proved popular with rich fall colors following close behind in importance.

Back-to-School Sweaters

Colebrook Knitwear, Inc., is now offering "Back To School 1959" sweaters that have been mothproofed with Mitin. Twenty-two new fall styles are being merchandised under the Anglolamb label.

Ponemah's Bondyne Fabric

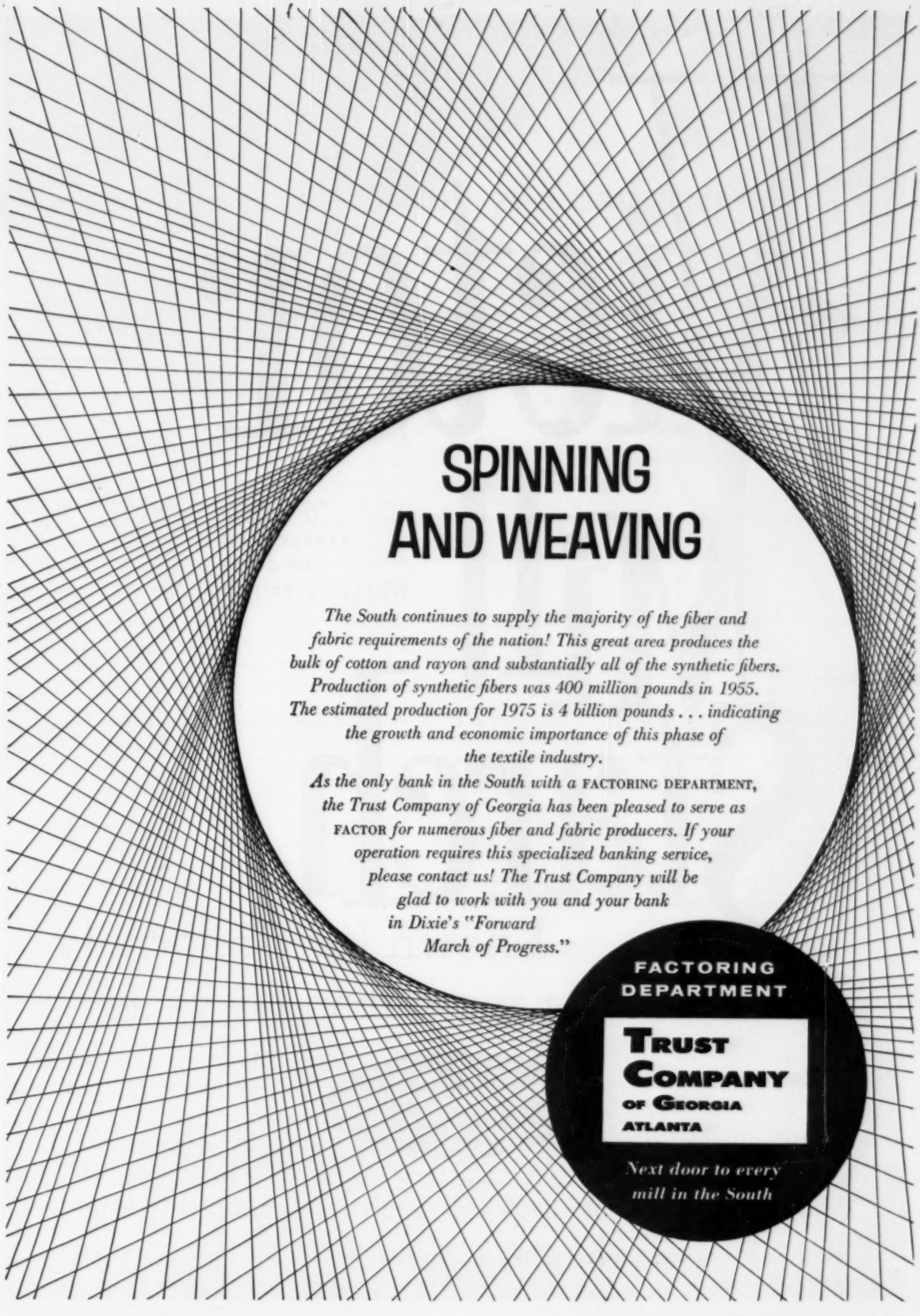
Ponemah Mills is now weaving a fine, silk-like, lightweight Bondyne fabric of 70% Avron high-strength rayon and 30% Dynel. This blend permits the spinning of finer yarns to make sheer fabrics, not offered in the Bondyne program before. The easy-care fabric has good press retention and crease resistance. It is hand or machine washable.

This month the fabric will be introduced by converters for spring 1960.

Pepperell's New Fabrics

Pepperell Mfg. Co. is now offering two new fabrics in its Nautilus collection of wash-and-wear cottons.

Pepprove is a new lightweight dobby in a basket-weave pattern. Narocord is a slim-corded fabric. Both are Sanforized.


SPINNING
AND WEAVING
The South continues to supply the majority of the fiber and fabric requirements of the nation! This great area produces the bulk of cotton and rayon and substantially all of the synthetic fibers. Production of synthetic fibers was 400 million pounds in 1955. The estimated production for 1975 is 4 billion pounds . . . indicating the growth and economic importance of this phase of the textile industry.
As the only bank in the South with a FACTORING DEPARTMENT, the Trust Company of Georgia has been pleased to serve as FACTOR for numerous fiber and fabric producers. If your operation requires this specialized banking service, please contact us! The Trust Company will be glad to work with you and your bank in Dixie's "Forward March of Progress."
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The Supervisor and Employee Satisfaction

• For your own peace of mind and for a better performance as a supervisor, you may need to re-examine your attitude toward "people problems." Here's a realistic look at both the limitations and the opportunities supervisors have for satisfying employees.

By **JAMES E. GARDNER,** Assistant Director of Personnel Research, Fieldcrest Mills, Inc.

The supervisor who believes he can satisfy all of his employees, that he can ultimately eliminate all of his so-called human-relations problems or develop a technique that will invariably solve them—a supervisor who believes such foolishness should, for his own happiness, get into some other line of work.

At the very least, he must lower his sights. Otherwise frustrations and disappointments will inevitably come and may embitter the very relationship between supervisor and workers about which the supervisor had built such great hope. For mustn't someone then be to blame? Isn't someone stubborn, unthinking, blind to his own best interest, stupid, rascally, untrustworthy, etc., etc?

What gives us such stanch optimism about human relations when our experience cries out so loudly and unmistakably against it?

Perhaps the sheer weight of the human-relations courses currently so much in vogue has dulled our critical sense and convinced up that the "people problems" can indeed be "handled" without too much trouble. Since this is a thing we really want to believe for our own comfort, the convincing could not have been very difficult.

That naive designation "people problems" is in itself something of a lure since it suggests a unique class of problems that responds to special techniques. Yet a supervisor would be hard put to cite a "non-people" problem; people have the stubborn habit of cropping up in just about all of his problems.

Labeling a problem is certainly not the same as solving it. And our mislabeling and oversimplifying the problem is a discouraging sign of our distance from a solution.

The appeal of human-relations courses is startlingly evident in the twin facts (which we strangely fail to find contradictory) that (1) there are so many human-relations courses and (2) there is so little proof that they work. Such strong attraction suggests that we feel a great need for increased skill in dealing with employees and are willing therefore to grasp blindly at any fugitive panacea within reach.

The fault is perhaps not in the courses themselves but in the assumption often made by the student-supervisors and sometimes shared by the instructor that certain approaches or principles are bound to succeed and are relatively easy to apply to specific situations. A related fault is a lopsided reliance on the technique used in the particular training program.

The satisfaction an employe gets from a job, as a true reading of much of the human-relations material will reveal, depends upon (1) the needs he brings to the job and (2) the extent to which these needs are met by the job. In short, job satisfaction appears to be basically a sort of ratio between what a man expects from the job and what he actually gets from it.

The limitations of the supervisor are apparent at once. Needs and expectations are difficult to determine to begin with. There appears to be a core group of needs common to everyone, such as prestige or status, group membership and approval, self-expression, and various types of security. But the strength of each of these needs will vary from employee to employee.

These differences present the amateur psychologist with a rich opportunity to guess at motives, but the supervisor cannot deal with such general and vague expectations. The problem is to determine the specific aspects of the job the employee is pinning his hopes upon and the strength of these aspirations.

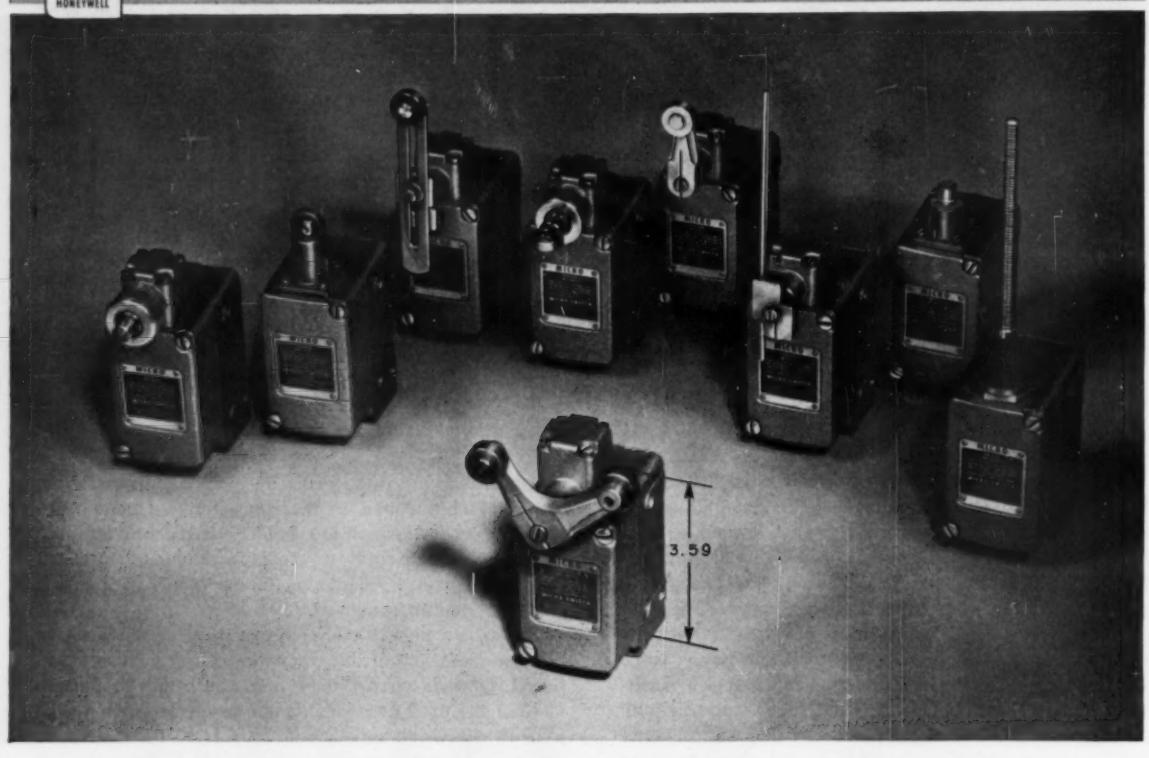
The fellow who has other sources of income, whose economic security is otherwise assured, may be little disturbed by his failure to gain a raise in pay. The fellow who seeks prestige through level of job will make a strong bid for promotion. The fellow who belongs to eight civic and fraternal organizations on the outside may feel no great need to affiliate at work with groups or cliques of employees.

Motivation tends to be more complex and obscure than these illustrations may imply. The fellow with the independent income may feel a great need for higher pay if pay, for him, is an important symbol of prestige.

Beyond the diagnostic difficulties of identifying specific needs, there is the practical difficulty of satisfying them.

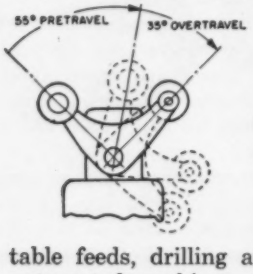
CONTINUED ON PAGE 204

MICRO SWITCH Precision Switches



New "Plug-in Limit" switch ...now there are nine

Here is a new "Plug-in Limit" switch with yoke actuator—the ninth in the famous "200LS" Series. The yoke is adjustable to any position on the shaft through 360°, and the operating head mounts in any of four positions. The new 206LS1 is a maintained contact switch.



"200LS" Series switches have found ready acceptance as limit switches for control of lathe carriages, grinders, table feeds, drilling and tapping equipment, automated machinery, etc.

"Plug-in Limit" switches plug into the terminal enclosure like a radio tube and can be replaced in seconds, practically eliminating costly downtime. They are rugged, reliable, and completely sealed against oil, water, dirt and dust.

Contact arrangement is two-circuit double-throw.

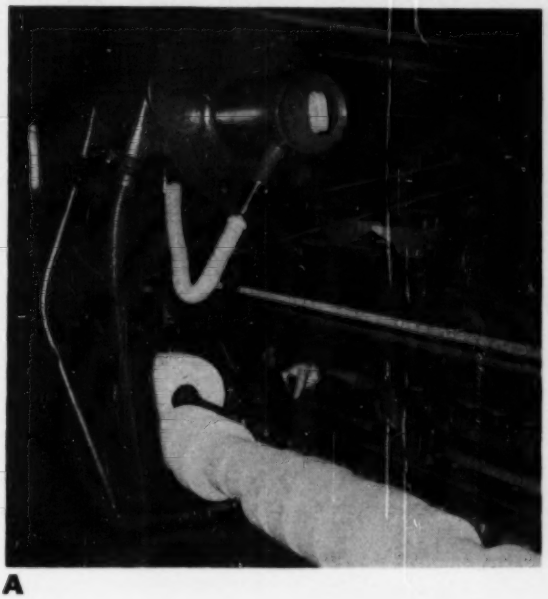
Electrical rating is: 10 amps, 120, 240, 480 vac; ½ hp, 120 vac; 1 hp, 240 vac; 0.8 amp, 115 vdc; 0.4 amp, 230 vdc; 0.1 amp, 550 vdc. Pilot duty rating is 600 vac max. Meets NEMA Industrial Control standards.

For details of the "200LS" Series, write or call the MICRO SWITCH *branch office or authorized distributor near you. Consult the Yellow Pages.*

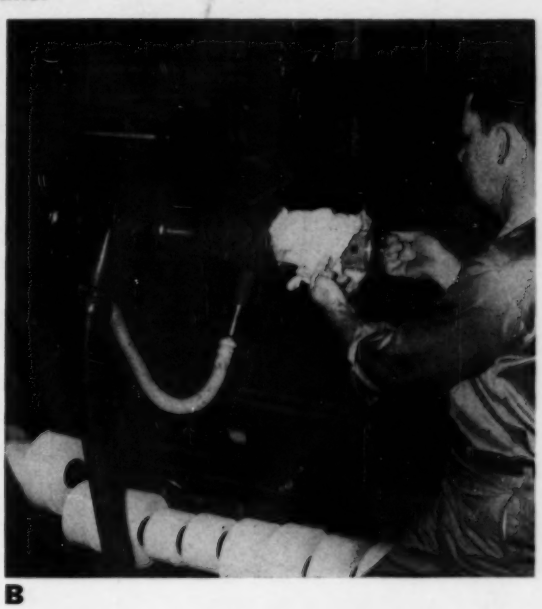
MICRO SWITCH... FREEPORT, ILLINOIS
A division of Honeywell
In Canada: Honeywell Controls Limited, Toronto 17, Ontario

Honeywell
MICRO SWITCH Precision Switches

Spooler Blower Operates Drum-Roll Brush Cleaner



A



B

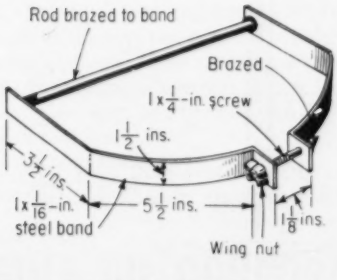
We used to spend a lot of time cleaning drum-roll brushes on our spooler.

To reduce this cleaning time, we built an attachment that is operated by the vacuum created by the blower while it is cleaning lint out of the bins. The hand in Photo A points out the nozzle of the attachment where it picks up wild yarn.

The vacuum cleaner on the blower does not affect the blower's regular job in any way. The cleaner is emptied by pulling the screen out of the housing and wiping off the waste as shown in Photo B. (K-137) *William I. Linder, Beaumont Mfg. Co., Spartanburg, S. C.*

Clamp Holds Comber Pan While Repairs Are Made

Now and then our comber sliver pans come loose at the seams and it is quite a job to solder them together. It is very difficult for one person to hold the loose edges together and at the same time manipulate a soldering iron and solder. Four hands are needed.



Instead of putting two men on the job, we made a clamp that fits around the pan. The arrangement is somewhat similar to the small clamps used by dentists for filling teeth.

The clamp is made of 1/16x1-in. steel banding brazed to a steel rod as shown in the diagram. A wing nut is used to tighten the clamp around the pan.

When the pan has been clamped together, it can be placed in a vise in any desired position for soldering. Both hands are then free to do the job. (K-121) *Fred G. Taylor, Hope Mills, N. C.*

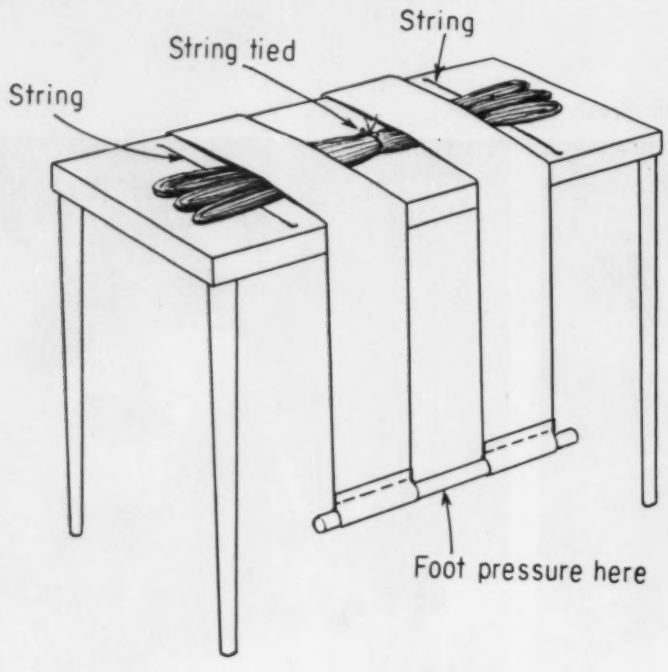
Quickly Made Screw-Plug Stops Leaks in Pipes

During a freeze or in other emergencies, you may need to repair small bursts in water, air, or steam pipes in a hurry. These jobs can be repaired temporarily without even cutting off the main-line valve.

Use a sheet-metal screw just a little larger than the largest part of the burst section of the pipe. Put two metal washers next to the head of the screw, and then put on a large rubber disk.

Screw this plug into the burst pipe until the rubber disk presses well against the pipe. The leak will stop completely. Then you can repair the leak at your leisure. (K-3883)

Simple Press Bundles Yarn Skeins Neatly



In our plant we often send small bundles of yarn skeins to the laboratory for testing or to customers for samples.

Packing these skeins presented something of a problem. Unless extreme care was taken both in packing and transporting the bundles, loose strands often became tangled.

We solved the problem by building a small press from some old leather straps and a stout board as shown in the diagram. The two strips of leather are screwed to the edge of the board, and the loose ends are connected by a cross piece of wood or metal. The board is fastened to a sturdy bench or mounted on legs of its own.

To use, three strings or bands for tying the skeins are laid across the board, and the bundle of skeins is placed on the board lengthwise over the strings. The leather (or canvass) straps are then flipped across the bundle, the straps are pulled down by pressing one foot on the cross piece, and the strings are tied.

Advantages are that the bundle is compressed and neat, both hands are free to do the tying, and much time is saved. The press also can be used to bundle up waste rags and other materials. (K-136) *H. A. McLean, Yorkshire, England*

Old Door-Hinge Pins Make Good Punches

A light center punch or nail set can be made from the pin from an old door hinge. These pins are tempered well, and the ball tops make good pounding surfaces. Just grind the pin point to the shape you need, and it's ready to use. (K-3882)

This Rapid Method Checks Wool-Oil Content

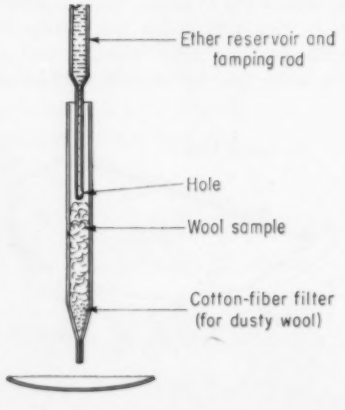
We check the oil content of wool at any stage of processing in a few minutes by means of the test outlined below. The method is accurate enough for all practical purposes.

The apparatus shown below is easily made from glass tubing. A weighed sample of wool is placed in the tube and 10 ml. of ether is dribbled over it through the small hole near the end of the tamping rod, which also serves as the ether reservoir. The sample is tamped repeatedly while the ether is flowing.

Cotton batting is used to filter the ether extract, which is caught in a weighed watch glass.

We have found that two 10-ml. portions of ether are enough to extract all the ether-soluble oils from a one- to two-gram sample of wool.

The ether is evaporated over a hot plate, and the watch glass carrying the oily extract is reweighed to determine the oil-wool ratio. (K-135) *H. A. McLean, Bradford, England*



$25 KINK WINNER

The $25 prize for the best Kink in July was won by:

H. J. Haas, Martinsburg, W. Va., for his Kink "Guide Starts Allen Setscrews in Difficult Positions"

WATCH FOR NEXT MONTH'S WINNER

Keep your spindles running clean and trouble-free with Gulfspin . . .

GULF MAKES THINGS RUN BETTER!

Do your spindles run smoothly year after year? If not, chances are you can save time and money by switching to Gulfspin—the oil that helps you cut costs 3 ways.

1. You save cleaning costs with Gulfspin—because its high oxidation stability resists the formation and deposit of sludge, gum, resin and rust. You don't have to pump your spindle bases as often. In some mills, spindles have run clean and trouble-free for more than ten years with Gulfspin.

2. You save power costs with Gulfspin—because it does not increase in viscosity even after long service. Spindles run easier. And starting torque is reduced.

3. You save maintenance costs with Gulfspin—because it has the load-carrying ability to keep spindles running smoothly—longer. Gulfspin gives spindles an extra margin of protection against high temperatures and excessive wear.

See how Gulf makes things run better! For information on the right grade of Gulfspin for your specific needs, contact a Gulf Sales Engineer at your nearest Gulf office, or write for Gulfspin folder.

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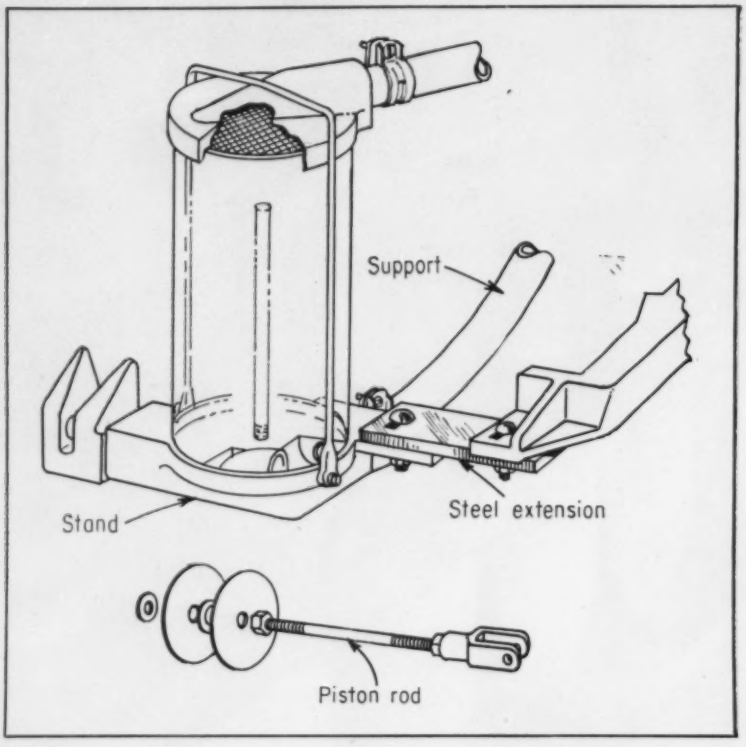
GULF

CIRCLE 177 ON READER SERVICE CARD

Extension for Loom Magazine Eliminates False Stops



On high-twist yarns such as those used in weaving combination crepe on S-6 looms, the loom often makes false stops on the first pick after a bobbin transfer. A false stop is made because the yarn lays too far back so that the loose strand of filling sweeps past the feeler wires of the center filling stop motion. Then the knock-off dagger engages the cam and stops the loom.

On these lively yarns, false stops are eliminated if the stand for the vacuum cylinder is moved forward. But sometimes it's necessary to move the stand farther forward than the slots in the stand and support permit.

In these instances, we make an extension to hold the stand. We cut a piece of cold-rolled flat steel 1¼x⅛-in. to about a 2-in. length. We drill a ⅜-in. hole in each end.

This strip of steel is bolted between the support and stand. With the stand in this position, filling yarn is held at a greater angle to the fabric and therefore the yarn stays under the stop-motion feeler wires. (K-4010)

Wrap Backwasher Nip Ends for Better Extraction

We got uneven extraction with some types of wool sliver when they were put through the squeeze rolls of the backwasher. Water squeezed out of the center area of the sliver, ran toward the outside edges, and was taken up by the end slivers.

We eliminated the trouble by wrapping one sliver around each end of the top roll in the squeezing head. The wrapped-on sliver acts as a blotter that soaks up excess water, and we now have evenly extracted stock that can be dried at a higher rate of speed. (K-140) *Joe Smith, Bradford, England*

Here's a Good Way To Draw Wires Through Conduits

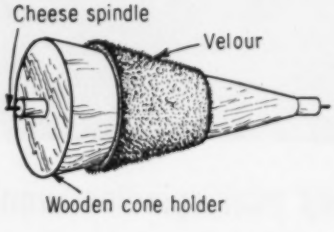
The difficulty of drawing electric wiring or cables through conduits can be eased by gluing the wiring to the draw wire.

Remove the outer cover from the electric wire for 4 ins., but leave the rubber cover. Then bore the end of the draw wire so that the rubber-covered wire fits into it fairly snugly.

Apply a thick coat of rubber-to-metal glue to the rubber-covered wire, and insert the wire into the draw wire. Bind the draw wire tightly around the electric wire until the glue is thoroughly set. Remove the binding material.

Put a light coat of shellac on the outside of the joint and dust the drying shellac with French chalk. The resulting joint is very smooth and will pull through most conduits easily. (K-3772) *W. E. Warner, Essex, England*

Velour Strip Keeps Cones in Place



In converting our cheese winders into cone winders, one big problem was to find or build a cone holder that would keep the paper cone securely in position.

We tried a number of holders, but in every instance vibration of the machine soon loosened the paper cone.

The problem finally was solved by wrapping the middle of the cone holder with a 2-in. velour strip. The pile of the fabric grips the inside of the cone and holds it in place. Results have been very satisfactory. (K-126) *N. Primentos, Melbourne, Australia*

YOU BENEFIT FOUR WAYS from WHITIN Even-Draft* Drawing

1. Increased production
2. More uniform sliver
3. Lower costs in drawing and subsequent operations
4. Better quality yarn and fabric

Partial view — installation of 264 deliveries of Whitin Even-Draft Drawing at Riegel Textile Corp., Trion, Ga.

Mill after mill is proving that Whitin Even-Draft drawing provides 4-way benefits. Operating at 400 feet per minute Even-Draft drawing frames produce extremely uniform sliver — reduce floor space and direct labor cost by as much as 50%. The improved sliver, and consequently better roving, results in greatly improved spinning room performance. Mills also report fewer ends down, increased yarn breaking strength and evenness. Weaving operations benefit from stronger yarn and mills agree that fabric quality has improved following the installation of Whitin Even-Draft drawing frames.

Now installed in more than 150 mills in more than 40 countries, these frames continue to make profits for their users.

*Trade Mark

For complete information ask your Whitin representative or write direct to us.

WHITIN MACHINE WORKS

WHITINSVILLE • MASSACHUSETTS

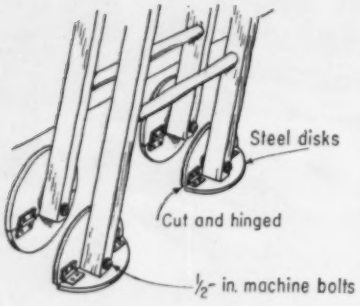
CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

Steel Disks Move Ladder and Hold It in Position

A hinged disk at the bottom legs of an ordinary painter's ladder makes the ladder easy to move and also positively secures the ladder in working position.

Two steel-plate disks 3½ ins. in diameter and ¼ in. thick are bored in their centers for ½-in. machine bolts; the bolts are a loose fit.

The disks are then cut into two parts ½ in. from the bolt holes. The cut-off sections are put back in their original positions with butt hinges and stove bolts.



A hole is bored through each bottom leg of the ladder so that the ½-in. bolts are a pressed fit.

To assemble the parts, the bolts are put through the disks with the bolt heads away from the hinged side of the disks. Two thin lock nuts are locked together on the back side of each disk so there's a 1/16-in. space to let the disks roll easily on the bolt-axle. The bolts are inserted through the ladder legs from the front and secured at the back with nuts.

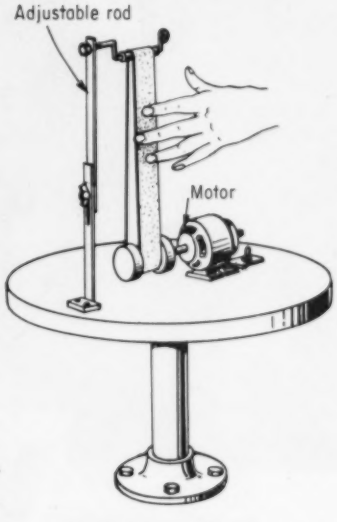
Because a ladder is always moved along a wall at a slight pitch toward the wall, the disks stay closed during rolling. But when the ladder is at the desired position, the painter flips the bottom sections of the disks backward to form a base. The hinges will let the bases conform to any angle of floor or ground, and the bases hold this position with great safety to the painter. (K-129)

Paint Guides Black To See Slubs Easier

Slubs that pass through the stop motion of the knitting machine and anchor in the eye of the guide cause many press-offs. If these slubs could be spotted sooner by the knitter, much bad work would be avoided.

One way to make slub catching easier is to paint the guide black so that the white slub or piece of lint stands out against the dark background. You'll find that paint used as described will reduce downtime considerably. (K-3917)

Finger-nail Buffer Prevents Picks and Snags



Some mills engaged in the production of full-fashioned hosiery employ a full-time manicurist to keep the operators' hands in perfect condition so that the hosiery will not be picked. Instead of employing a manicurist for this job, our mill built a buffing machine.

The apparatus consists of a No. 3 spool-type pulley, attached to the shaft of a small motor, and a band of cloth that runs from the pulley around an adjustable rod. The cloth is saturated with a mild abrasive that is not harmful to the skin.

When an operator's fingers become rough, she buffs them on this machine; and many valuable pairs of hosiery are saved from damage. (K-3323)

Catalog System Locates B-C Spooler Parts

It is not uncommon to keep on hand as many as 800 to 900 different parts for Barber-Colman spoolers and warpers. If these parts are dumped around in a haphazard manner, it is difficult to find the part wanted when trouble occurs. A system that shows what is on hand and where it is located saves time.

To start such a system it is first necessary to arrange parts in an orderly manner in drawers of the workbench and in cupboards. A good method of handling the small parts is to tear out all of the partitions of one drawer of the work bench and fill it with small cardboard boxes such as the ones used by Barber-Colman for shipping tying-in machine parts. The small parts are put in these boxes and each box is given a number.

Each compartment of the other drawers is numbered and each partition of the cupboards is numbered. Then by using the regular B-C parts catalog it is possible to work out a system that will make finding each part quick and easy.

First each illustration in the catalog is gone over, and each part kept in stock is identified by placing a small red dot beside the part number on the illustration. Then beside the name of each part is written the location of that part.

For example, beside the part number and name on the listing might be written D1B76, which would indicate that the part would be found in Drawer No. 1, Box No. 76. In the same manner D2B4 would indicate Drawer 2, Compartment B4. C1D5 would indicate Cupboard 1, Compartment D5.

When a part is needed, the first step is to look up the part in the catalog. If a red dot is beside the part number, the part is on hand. The number of the illustration is looked up on the listing, and the location symbol shows where the part is located in the supply room. (K-3091)

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The uses for Clinton products are growing, too!

Any midwestern farmer will tell you that you can hear corn grow on a hot summer evening. Sounds unbelievable doesn't it? But—even more amazing is the number of good things that require corn in their manufacture.

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Clinton's uniformly controlled, quality products will meet your textile manufacturing requirements. Consult your Clinton salesman. He will provide product information, arrange for prompt technical service, or assist you in any way possible.

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CIRCLE 181 ON READER SERVICE CARD 181

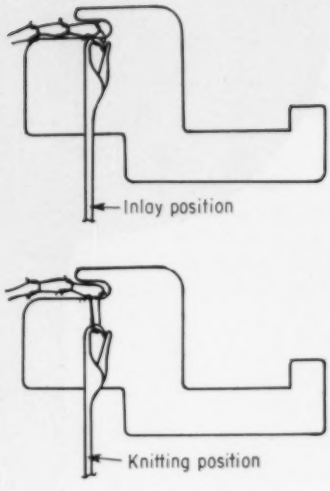
How To Set CK Machines To Produce Inlay Fabrics

Knitting machines with two- and three-position pattern wheels are commonly used for the manufacture of inlay fabrics. To set a machine for this purpose it is necessary to arrive at a given uniform knitting quality (courses per inch) for all feeds and to set separately the group of feeds producing the knitted background stitch and those producing the inlay pattern.

Instructions for this kind of setting usually are given by the designer or machine builder, who specifies at what quality the machine is to be set before the wheels are mounted and how much the stitch is to be loosened for the background and tightened for the inlay feeds. The latter operation is by far the most critical because if the inlay feeds are not considerably tighter than the knitting feeds, the inlay yarn will stab through the back of the fabric instead of lying on the fabric surface.

Through long experience we found what we consider the fastest and safest method for setting the cams at the inlay feed. The cams are gradually raised and the stitch is tightened until at the lowest position at that feed the needles come just below the sinker throat, but no lower.

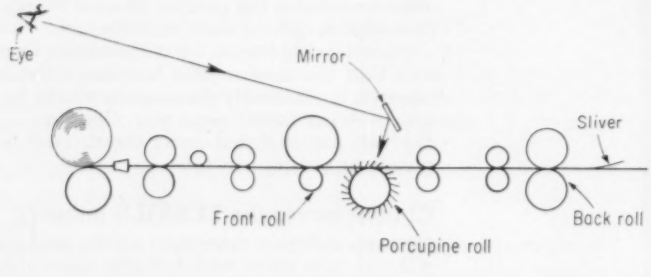
The relation between knitting and inlay positions is shown in the sketch. If this relationship is maintained, there should be no difficulty in obtaining perfect inlay fabrics regardless of the specific pattern desired. (K-142)



Mirror Makes It Easy To Inspect Hidden Roll

The porcupine roll on our French-system draw box is located at a place that makes inspection impossible from the point where the operator normally stands while running the machine. Because of this situation, the operator frequently had to leave his post to inspect the porcupine roll for lap-ups before they developed into full-scale chokes.

We solved this problem by mounting a 3-in. mirror 4 ins. above the first carrier roll and adjusting the mirror at an angle so that the operator can see at a glance if trouble is brewing at the porcupine roll. Many steps are saved this way. (K-125) *N. Primentos, Melbourne, Australia*



Felt Is Better Than Paper For Loom-Temple Packing

When older-type loom temples without adjustable stands wear slightly, the head end drops down on the loom race plate and has to be raised to prevent tearing the fabric being woven or damaging the race plate or race-plate cover.

Loomfixers usually pack under the slide with heavy paper or cardboard. But this paper wears with temple vibration, and frequent readjustments are necessary.

A better material to place under the slide as a packing is felt that's often used for race-plate covers. This felt can be packed down more firmly at installation, and it also resists wear from temple vibration. As a result, less temple maintenance is required. (K-4050)

$500 FOR BEST KINK IN 1959

$25 for Best Kink Each Month—Plus $5 to $10 for Every Kink Accepted

A KINK . . . is any idea that will cut costs, improve quality, reduce work, increase production, or make work easier.

You can send in as many Kinks as you want to any month.

All Kinks are paid for on acceptance.

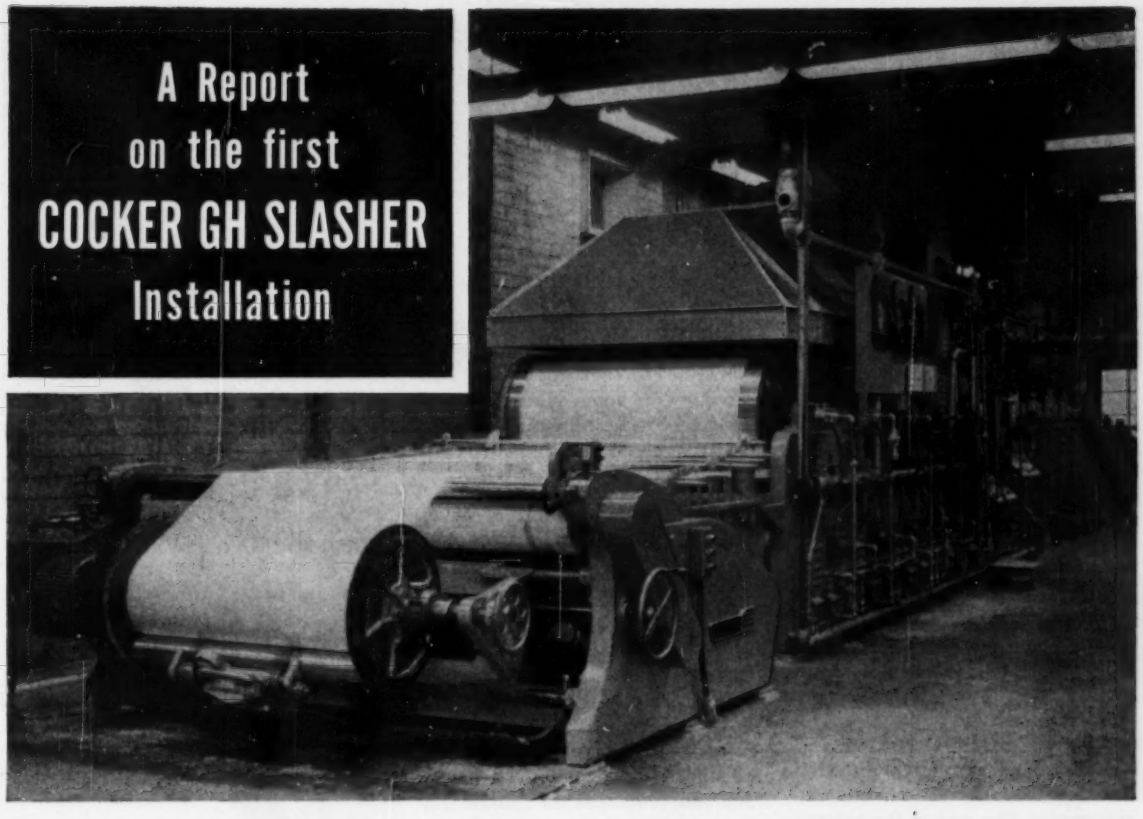
Previously published Kinks are not eligible for prizes.

Let us know if you don't want your name published.

Prize winners are selected by TEXTILE WORLD readers. At least 300 will be asked each month to vote on the best Kink that month. In case of ties, duplicate prizes will be paid.

Send Kinks to:
Kinks Contest, TEXTILE WORLD
201 E. Coffee St., Greenville, S. C.

A Report on the first COCKER GH SLASHER Installation



A Complete Cocker GH Slasher Installation at Morgan Mills, Springfield Division, Laurinburg, N. C.

- **1540 pounds per hour** *(combed yarn)*
- **15 percent pick up**
- **40 percent penetration**

This, the first complete Cocker GH Slasher Installation, has fully proven the claims made for it at the Greenville Exhibition.

Operating with 6,400 ends 40s single combed yarns, this GH Slasher has been running at a top speed of 135 yards per minute and a production of 1540 pounds per hour . . . with 4½% moisture regain, 15% size pick up, and 40% penetration. This has resulted in a weave room efficiency of 96% and an increase in loom assignment.

The Model GH is unquestionably the World's most modern, most efficient, and most economical slasher. Write for full information today.

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CIRCLE 183 ON READER SERVICE CARD 183

Bolster Briefs

by Ron Kinney

Manager, Textile Sales

During the past 12 years Ron Kinney has had occasion to visit almost every textile mill in the U. S. A. In these columns he answers some vital questions about bolsters and spindle maintenance—answers that could help improve production and cut operating costs.

Does SKF sell complete spindles?

No. We market the anti-friction bolster unit to all the leading spindle manufacturers. They make the finished product.

Does one type of SKF bolster fit all applications?

No. There are many different sizes and designs to fit all existing requirements. The size of the bolster depends on several factors, such as gross weight of the package, ring diameter, speed, etc.

What do you have in the way of a new bolster?

The HF series is our latest development. It comes as the result of over 30 years experience in the textile field with almost 50,000,000 SKF equipped spindles having been placed in operation throughout the world. Many of the original installations are still giving good performance!

What will the HF equipped spindle do for me?

It gives you greatly increased capacity for heavier loads at higher speeds. It is specifically designed for those mills that want increased traverses and production.

What about lubrication?

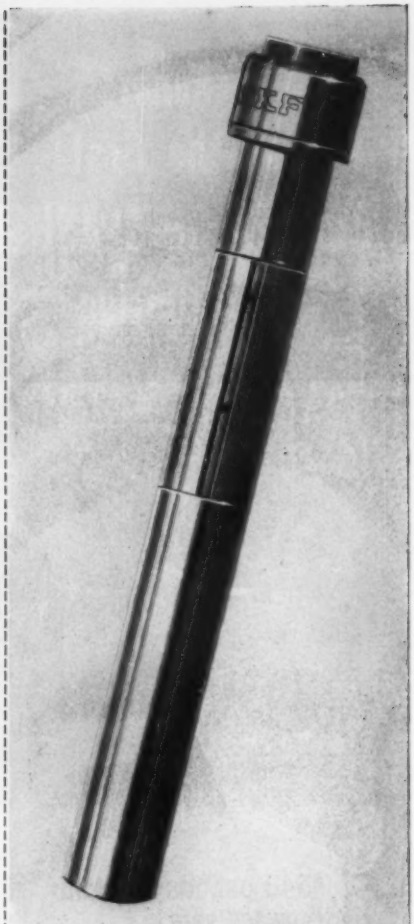
The HF design has eliminated all frictional damping. By so doing, the relubrication periods are few and far between. For instance, you can operate the HF 2 size for 20,000 hours before it is necessary to relubricate. Then all you do is merely remove the blade, withdraw the old oil and add the new. The bolster and base remain on the spindle rail! Just think, over 3 years of trouble free performance and then with a cost of only a few pennies, you are ready to go again.

Is it necessary for us to specify SKF when ordering spindles?

Yes, it is a good policy, because in this way you are assured of receiving the genuine product which has been time proven and accepted. As a form of insurance to you, it is best to specify SKF—no substitutes accepted.

5941

GOT A PROBLEM?
SEND YOUR QUESTION TO
"BOLSTER BRIEFS".
c/o SKF INDUSTRIES, INC.
P. O. Box 6731,
Philadelphia 32, Pennsylvania



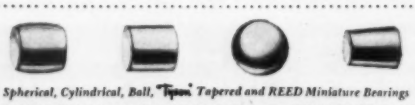
SKF introduces its... new "HF" Series Bolster

Planning to buy high-speed, heavy-package spinning frames? Then you'll want every spindle equipped with this new, anti-friction bolster.

It carries the heaviest packages—smoothly, without vibration—at highest speeds. Yet it only needs a few drops of oil every 3 or 4 years.

For details, call GArfield 6-6400, or write: SKF Textile Division—Philadelphia, Pa., or Charlotte, N. C.

Specify "SKF-equipped" accept no substitutes



Spherical, Cylindrical, Ball, "Type" Tapered and REED Miniature Bearings

EVERY TYPE—EVERY USE
SKF®
SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

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Four-Color Weaving Machine

Fabrics with four colors of filling are now being woven with a filling-changing attachment applied to the weaving machine made by Sulzer Bros. Ltd., Winterthur, Switzerland. The filling can be changed in any desired order on the machine, Type 85 VS 10E.

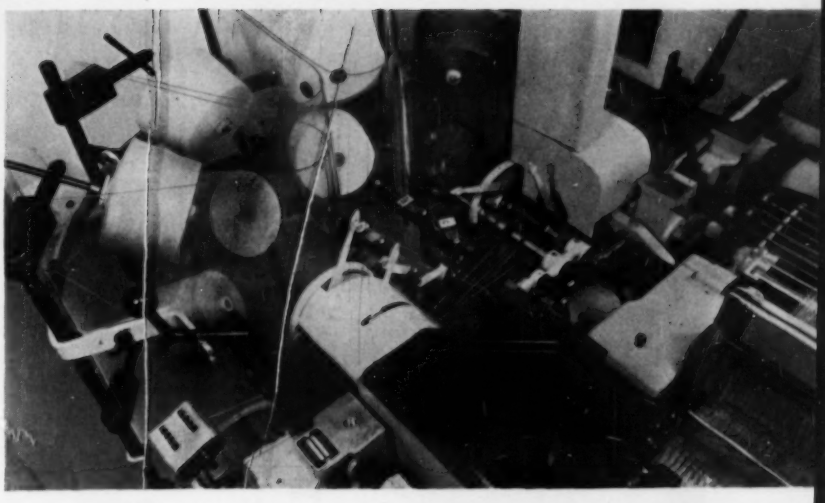


Fig. 1 shows the main section of the four-color filling mechanism with the changer (1) on which the four yarn holders (2) are arranged in an arc. From the four crosscoils attached to the weaving machine, each of the filling yarns *A*, *B*, *C*, and *D* run to the yarn holder, where they are held by a clamp.

At any given time, one of the four yarn holders is in the operating position. With the shuttle level as in the sketch, filling yarn *C* is in weaving position.

Selection of the yarn holder is made by a cam gear. The stud disk (3), connected with the main shaft of the machine, drives the crosswheel (4), which in turn drives the timing wheel (5). The timing chain is composed of individual cam links (5a) and turns with the timing wheel (5).

Engagement of one of the four studs of the stud disk (3) in the crosswheel (4) causes the timing wheel (5) to make one-sixth of a revolution. The next length of the timing chain presses to the right, according to its shape, to move the spring-loaded roll of the roll arm (6).

Then this movement is transmitted through the two jointly engaged sprocket-wheel segments (7) to the changer (1), which pushes the yarn holder and the yarn into weaving position.

By using different chain links, filling can be changed to any desired color or can be held in the same position just as on a multishuttle loom.

In weaving position, the yarn is held

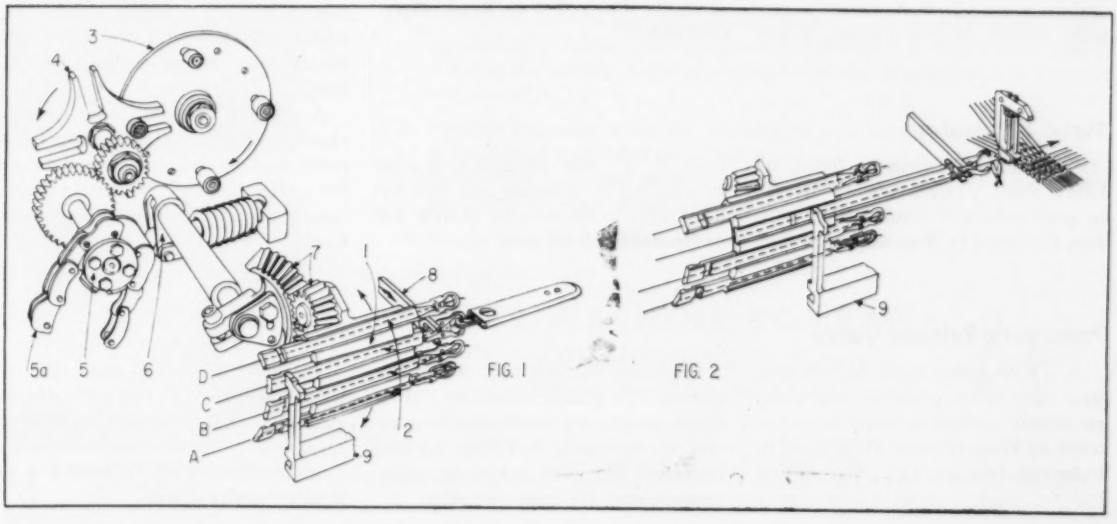


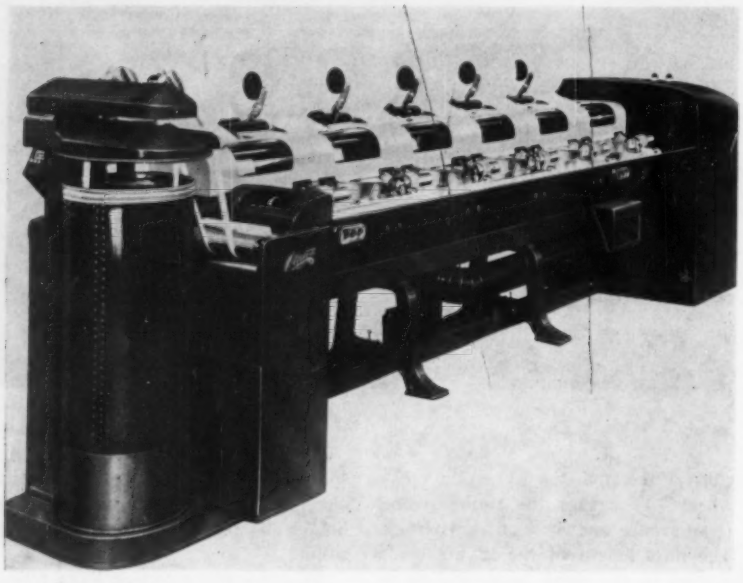
FIG. 1 FIG. 2

by the shuttle clamp; and operation of the opener (8) causes the clamp to release the yarn. Then the shuttle is accelerated and pulls the yarn through the warp shed.

Fig. 2 shows how the yarn holder, after its entry, catches the clamp to release the filling end near the selvage of the fabric. Subsequently, the filling is cut off and the yarn holder is brought back to its initial position by return lever (9).

Normally the timing chain is shifted one length with each turn. But by removing two studs opposite each other or three studs on the stud disk (3), the yarn for that particular timing-chain length is fed twice or four times successively for extension of periodicity. **(Circle T-1 on Reader-Service Card)**

High-Production Comber



An improved comber with extra-high production per unit of floor space has been announced by Platt Bros. (Sales) Ltd., Oldham, England.

The six-head machine produces 44 lbs. of 40- to 60-grain sliver per hour and can comb laps made on any recognized system of preparation. Either bicoil or twin-can delivery is available. From 14x36- to 16x42-in. cans can be accommodated.

The machine can be set to extract from 6 to 25% waste for all classes of work from supercombing to semi-combing. **(Circle T-2 on Reader-Service Card)**

Static Eliminator

Carpeting that normally builds up heavy static charges can be treated to overcome this trouble with Stat-Eze, marketed by Fine Organics, Inc., Lodi, N. J. The product is applied by spraying or sponging and will last from three to six months. **(Circle T-3 on Reader-Service Card)**

Pneumatic-Release Valve

A quick-release valve for air-pressure venting of cylinders and other pneumatic devices is being manufactured by Westinghouse Air Brake Co., Industrial Products Div., Wilmerding, Pa.

Important features are: (1) greater capacity, (2) greater sensitivity, (3) reduced weight, (4) unaffected by rotation, (5) mounting flexibility, (6) long operating life with minimum maintenance, and (7) quiet operation.

The valve is made of aluminum and weighs only 7 oz. Pressures can be vented in small increments of approximately 6 psi.; this feature permits more-precise control. **(Circle T-4 on Reader-Service Card)**

Knitting-Machine Lubricator

Type NV automatic lubricator made by Bijur Lubricating Corp., Rochelle Park, N. J., is being used on the Model FBW-6 high-pile knitting machine manufactured by Wildman Jacquard Co., 1210 Stanbridge St., Norristown, Pa.

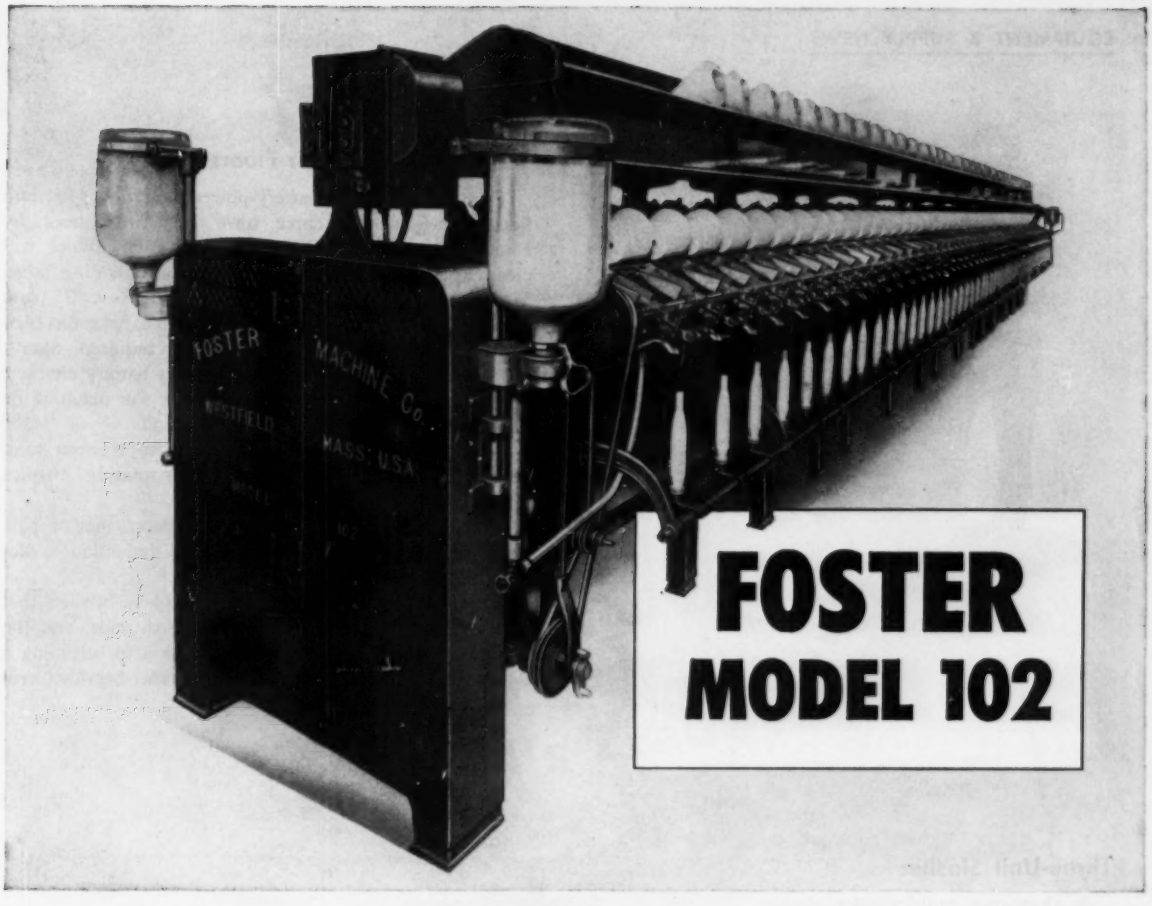
The compact unit provides precise-filtered lubrication in the dial cap of the machine at the cap, cam casing, head gear, and take-up gear to prevent spoiling fabrics from overoiling. The system meters the exact amount of oil to the vital bearings and permits continuous high-speed production. **(Circle T-5 on Reader-Service Card)**

Nylon Thrust Bearings

A glass-fiber-filled nylon retainer for needle thrust bearings has been announced by Torrington Co., 49 Field St., Torrington, Conn. The plastic retainers are manufactured in addition to the company's steel retainers.

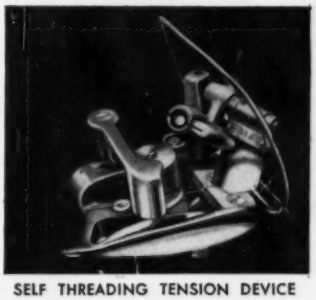
The retainers are offered only in nonstandard sizes and are made to customer's specifications. The plastic material is practical for bearings up to a 3-in. bore, which is the largest size made with steel retainers. Load and life capacity ratings are the same for both.

A conical needle thrust-bearing plastic retainer takes both thrust and radial loading and eliminates the need for radial bearings in certain applications. **(Circle T-6 on Reader-Service Card)**

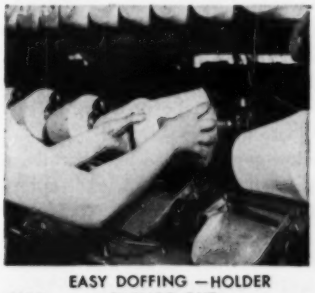


FOSTER MODEL 102

Flexibility-Economy-Quality Winding



SELF THREADING TENSION DEVICE



EASY DOFFING — HOLDER SWINGS OUT

635-8

ECONOMY FEATURES

While the Foster Model 102 Winder is widely known for its flexibility or adaptability to changing situations and for the quality of its winding, its economy features should not be overlooked. Here they are:

1. Doubles production and reduces operating costs by ⅓ as compared with obsolete machines, due to high speed, self threading tension device, easy donning and doffing, and empty bobbin conveyor discharging into standard size truck.
2. Negligible repair costs (as low as $10.00 per year per 100 spindles) because of fabricated steel head end, floor stands and sampsons; hardened steel parts where contacted by yarn; rubber boots over ball bearings on cam shaft and roll shaft, which facilitate alignment and reduce vibration.
3. Simple adjustments. Any competent fixer can make them.

Bulletin A-95-A on request.

FOSTER MACHINE COMPANY

A Yarn Winder for Every Purpose

Westfield, Massachusetts, U.S.A.

Member of American Textile Machinery Association

Southern Office — Johnston Bldg., Charlotte, N. C.
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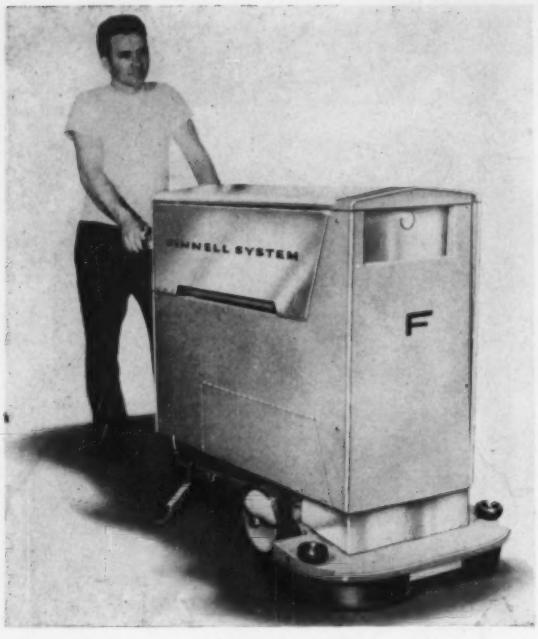
European Representative — Muschamp Textile Machinery (Sales) Ltd., Eider Works, Wellington Road, Ashton Under Lyne, Lancashire, England.



Scrubber-Vacuum for Floors

Two models of a battery-powered scrubber-vacuum floor-maintenance machine have been introduced by Finnell System, Inc., Elkhart, Ind. Each model will clean up to 21,600 sq. ft. of floor per operating hour.

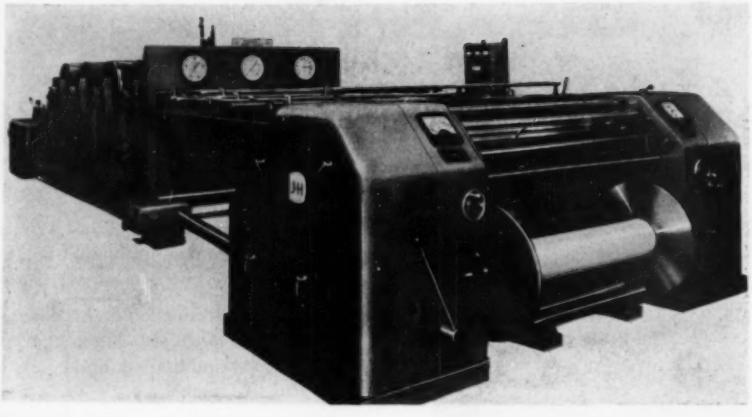
The machines are powered by four 6-v. 25-plate batteries with an operating life of 6 to 8 hrs.; for two-shift operation, two sets of batteries are required. Standard equipment includes a small compact battery charger; the batteries may be charged right on the machine or may be rolled out onto a charging stand.

Both machines have a 17-gal. solution-dispenser tank and a 19-gal. pickup tank. Counter-rotating brushes eliminate torque.

Since the machines are quiet in action, they're particularly good for areas where noise reduction is desirable.

The first model, Mark 20, has two 11-in. brushes that clean and leave a damp-dry path 20 ins. wide; and the second, Mark 26, has two 13-in. brushes for cleaning a 24-in. width of floor. **(Circle T-7 on Reader-Service Card)**

Three-Unit Slasher



A three-unit multicylinder slasher that's made in three separate units and runs at speeds up to 100 yds. per min. has been announced by Platt Bros. (Sales) Ltd.'s associate company, Joseph Hibbert & Co. Ltd., Darwen, England. Features are said to be attractive design, ease of maintenance, and high production potential.

The machine is equipped with Model-A.4 headstock that has a mechanical drive to provide a constant predetermined tension throughout the build-up of the yarn beam. The drive is easily adjusted to any predetermined tension by the yarn number and the number of ends in the warp. It operates over a ratio of bare-barrel diameter to full-beam diameter of up to 1 to 5.5. It can be supplied to run bare-barrel diameters from 4 to 5 ins., 5 to 6 ins., etc.

The only electrical equipment is an a.c. squirrel-cage motor and control gear. A hydraulic variable-speed gear controls machine speed and provides any winding speed within the wide range of 0 to 100 yds. per min.

The multicylinder dryer has a chain drive to the cylinders, and an automatic constant yarn-tension control permits predetermined yarn stretch and velocity to any given extent during drying.

Cylinders are all-welded stainless-steel construction for steam pressures up to 40 psi. Each group of cylinders has an independent stop valve so that steam can be easily adjusted to warp and speed requirements.

A covering on the guide roll and first cylinders in contact with yarn prevents size from sticking to the surfaces. Individual temperature control is available for filament man-made-fiber warps.

Two basic designs are furnished for the size applicator: (1) single roll and (2) double roll. Hydraulic loading on squeeze rolls can be provided in any combination.

A low-capacity size box permits a quick turnover of size and consequently eliminates the need for recirculation. Size level is controlled with a sensitized electrode. Rubber-covered squeeze rolls are optional. **(Circle T-8 on Reader-Service Card)**

You can Save Money Increase Production Improve Quality ...on Ideal's Trade-In Offer

Ideal will give you a generous trade-in allowance on your old frames against the purchase price of new or rebuilt 16" or 18" gauge four delivery Ideal Feathertouch Drafting Systems.

On rebuilt equipment every moving and working part above the coiler base is brand new and the frame you get is equal to any drawing in appearance, performance and quality. What's more, you lose practically no production time, because your new equipment is installed by Ideal erecting crews as soon as your old frames are moved out.

Ideal Feathertouch Drafting Systems are second to none in speed, performance, and sliver quality. They run smoothly and quietly at speeds of over 400 ft. per min. in normal, consistent operation. Patent construction features prevent damage to fibers and automatically even out thick and thin places in the sliver. Ideal's individual Vacuumatic Systems keep the fiber cleaner. Write, wire, or call today for full information.

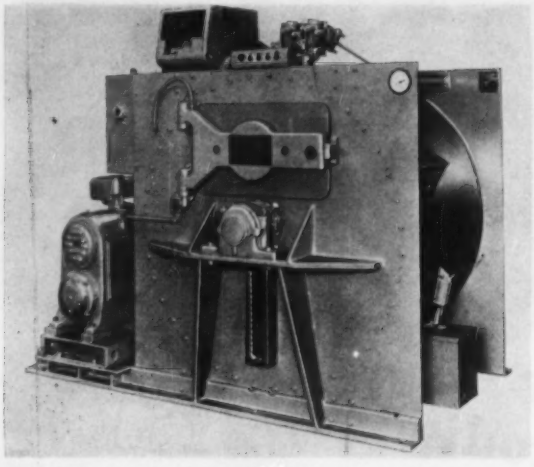
Some Features:

Individual Vacuumatic Cleaning
Individual Motors Individual Drives
Electro-Magnetic Clutch
Electric Knock-Off Actions
Ball Bearing Spacing Sections
No Shafting, Flat Pulleys, or Belts
The Famous Feathertouch Action
—produces highest quality sliver—at over 400 ft. per min.
Frames can be operated singly or in multiples

Ideal Industries, Inc.
Bessemer City, N. C.

THE ORIGINATORS OF HIGH SPEED DRAWING

Washer-Extractor



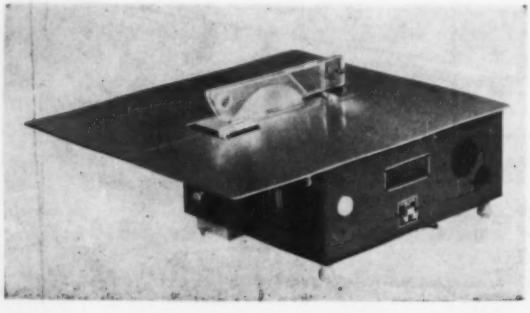
Knitted sweaters or other garments can be washed and extracted in a machine now available from American Laundry Machinery Co., Ross & Section Ave., Cincinnati 12, Ohio. The unit is rated as a 48x36-in. machine and features semiautomatic or fully automatic air-operated washing controls.

The cylinder is available in a two-compartment horizontal form or a three-compartment Y-shape. Tub and cylinder are made of stainless steel. A two-position air-operated brake permits positioning for loading or unloading and braking after extraction. **(Circle T-9 on Reader-Service Card)**

Slitting Machine

A table-type cloth-slitting machine is available from Eastman Machine Co., Buffalo 3, N. Y. Feature is a 7½-in. round knife that provides 6 to 7½ ins. more cutting edge than the usual 5- or 5½-in. knife.

A narrow, adjustable throat-plate fitted in front of the knife keeps cloth from being pulled in below the knife. The unit has a ⅓-hp. motor and can be had with two sizes of work platforms, 20x24 and 13½x20 ins. **(Circle T-10 on Reader-Service Card)**



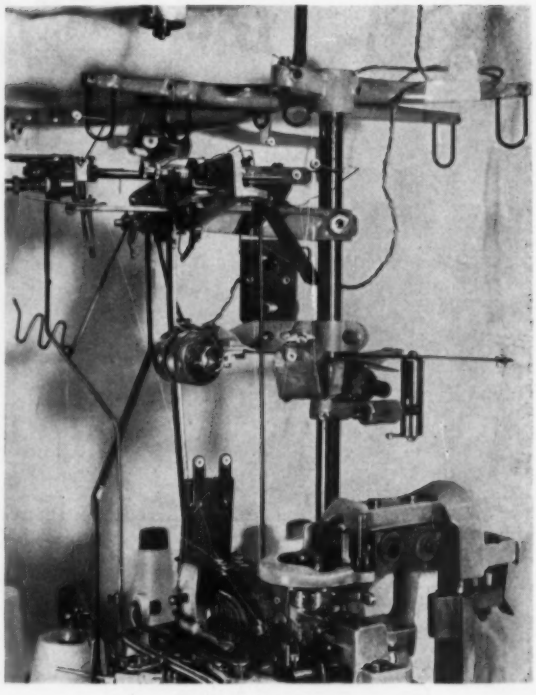
Warp Size

An acetate-gum warp size, Mira-Film, for spun man-made fibers is available from A. E. Staley Mfg. Co., Box 151, Decatur, Ill.

Main properties of the size are: (1) low-gelatinization temperature, (2) quick cooling, (3) viscosity stability and reduced setback on cooling, (4) viscosity recovery after ageing, (5) good paste consistency, (6) improved film strength and abrasion resistance, (7) applicable without resin adjuncts, and (8) greater weaving efficiency.

The size is offered in eight types for a complete range of fluidities. **(Circle T-11 on Reader-Service Card)**

Seamless-Hosiery Control



An automatic tension control for seamless hosiery that controls over 90% of finished leg length to within ±½ in. and completely eliminates all ringing has been developed by Macqueen Instruments Ltd., 25 Dover St., London W. 1, England.

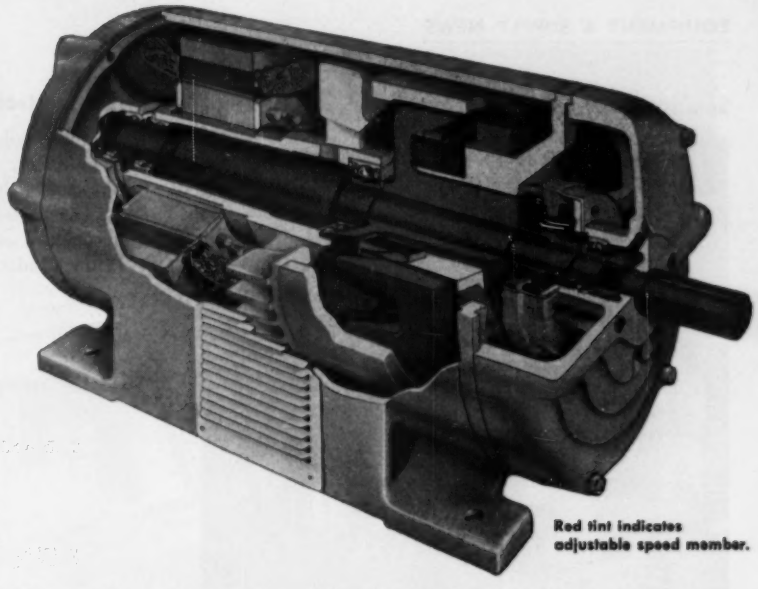
The yarn is fed directly from a pirn immediately above the tension control. As yarn is consumed in knitting, it slides through and around the capstan drum, which oscillates to maintain constant selected tension in the feed to the knitting head.

For the control, a three-phase transformer of 22 v. is required. **(Circle T-12 on Reader-Service Card)**

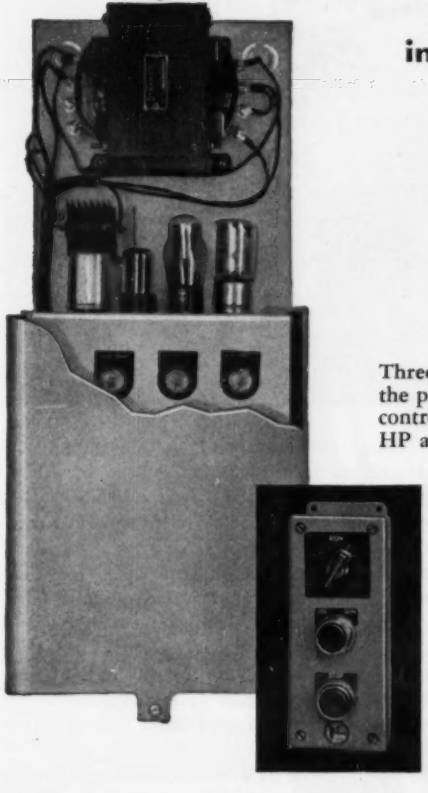
THIS NEW QUILL-TYPE AJUSTO-SPEDE® DRIVE

Plus

THIS NEW K-2 CONTROL and PUSH-BUTTON STATION



Red tint indicates adjustable speed member.



Give You Controlled Adjustable Speed from an AC Power Source

in a Compact, Low Cost 3-Unit Drive Package by

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Three compact components, the Ajusto-Spede Drive, the K-2 Control, and the push-button station make up this complete drive package which provides controlled adjustable speeds for any application from ½ HP through 7½ HP at 1800 RPM.

Remote wall mounting of the control panel conserves space on the driven machine; the push-button station places vital controls at the operator's finger tips.

Standard control features include on-off clutch control, infinite speed adjustment, constant speed regulation, and jogging. Any of a variety of special features may be easily and economically added to the standard control by the installation of a single resin-encapsulated circuit.

Send for complete information covering design and operation of the new models ACM-903 and 904 Ajusto-Spede Drives. Read how the new K-2 Control provides infinite speed adjustment, on-off clutch control, constant speed control, jogging, threading, cascading, and acceleration control.

Our New Bulletin K-2-159 is Now Available.

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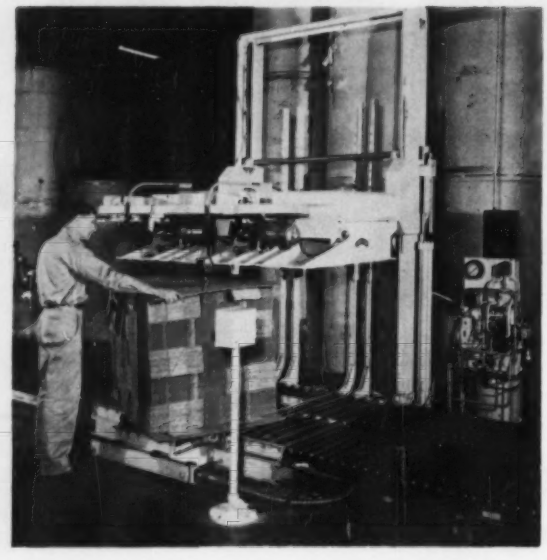
CIRCLE 191 ON READER SERVICE CARD 191

Strapping Presses



A series of strapping presses, with two basic capacities of 6,000 lbs. and 16,000 lbs. maximum compression, and in two models is offered by Signode Steel Strapping Co., 2600 North Western Ave., Chicago 47, Ill.

Both Model CS and CSF provide a mounting system for Signode power-tensioning and sealing tools. In addition, Model CSF has equipment to feed the strapping around the bale.

Loads up to 84 ins. high, 72 ins. long, and 65 ins. wide can be compressed and strapped on the machine. An optional built-in turntable facilitates two-way strapping. **(Circle T-13 on Reader-Service Card)**

Loom-Binder Material

A synthetic loom-binder material developed by Armstrong Cork Co., Textile Dept., Lancaster, Pa., is said to have good abrasion resistance, is not affected by humidity and temperature changes, and does not have to be broken in.

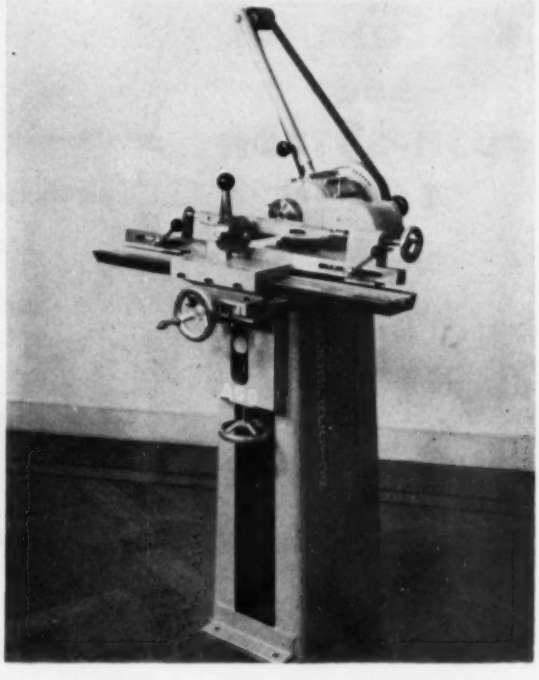
The material, CN889, is a composition of cellulose fibers, ground cork, and synthetic oil-resistant rubber densified under heat and pressure. It is made by a beater-saturation process that assures uniformity in the material by providing an even mixture of the component parts with the binder evenly deposited over the entire surface.

Dimensional stability results so that only a minimum of binder adjustments are required at the loom. **(Circle T-14 on Reader-Service Card)**

Brine Control System

Saturated solutions of brine are kept at the proper level automatically by a level control system developed by Morton Salt Co., Industrial Div., 110 N. Wacker Drive, Chicago 6, Ill. The Levetrol unit is offered in four standard assemblies to suit specific purposes. **(Circle T-15 on Reader-Service Card)**

Shuttle-Truing Machine



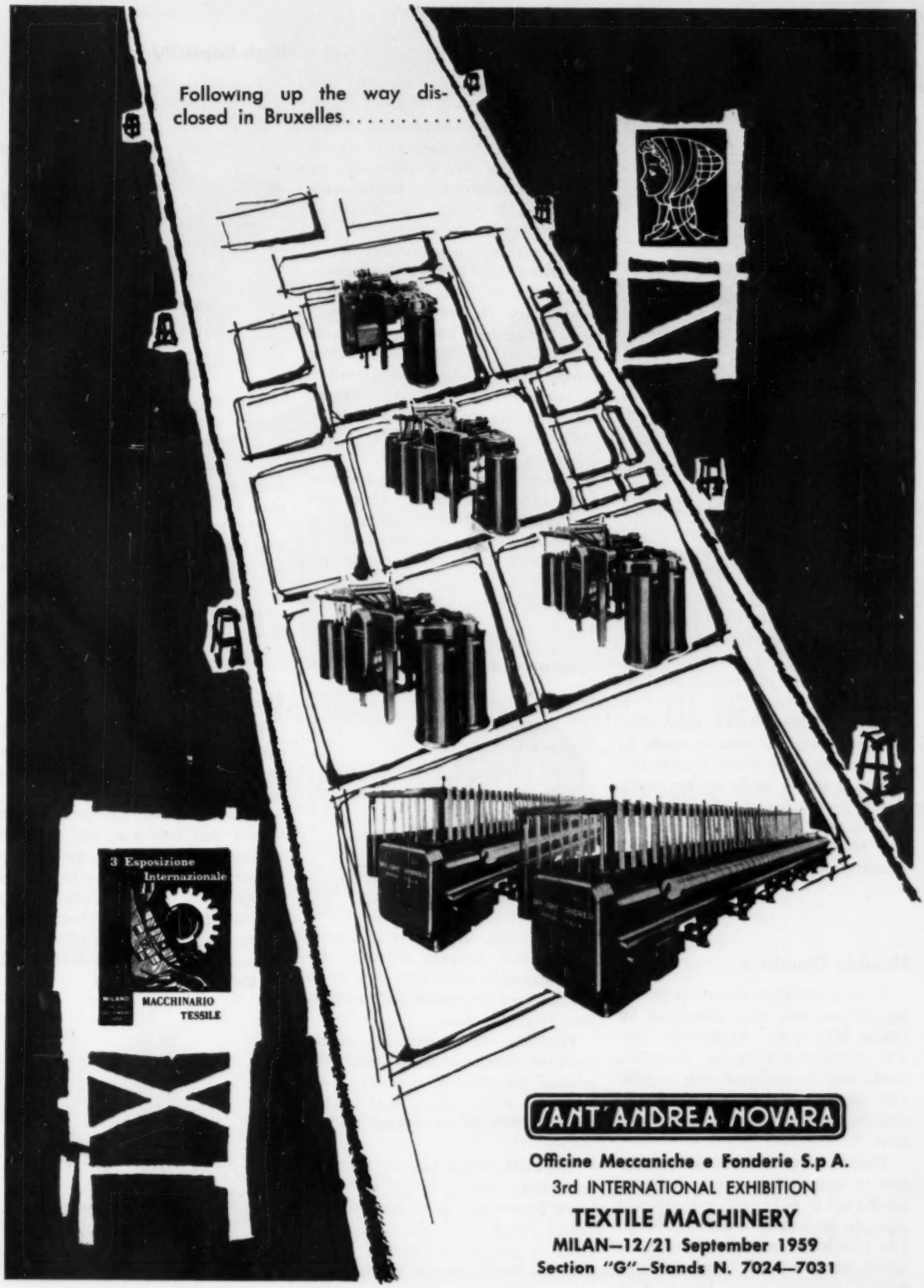
A shuttle-truing machine with a tip-grinding and polishing attachment is being manufactured by Lignostone Fabriek, Ter Apel, Holland, and is being sold in the U. S. by Techno Exports Lignostone Dept., P. O. 65, Gracie Station, New York 28, N. Y.

The machine, Ago-Recorrector, is designed for quick setup between centers and can be used on any wood, fibre-clad, or plastic shuttle from the smallest up to 23⅜x2⅜x2⅜ ins.

The shuttle is trued smoothly all the way to the points. A shuttle-bottom support bar is easily adjusted to the required shuttle height, depth, and angle with a vernier scale.

The cutter head, driven by a ¾-hp. 3,400-rpm. motor, has removable cutter blades and also holds drills or router bits for cutting shuttle slots and grooves.

For easy grinding and polishing of shuttle points, two gear-box-driven rubber friction rolls spin the shuttle against an abrasive belt that runs in the opposite direction. The space between the rolls is adjusted for different-size shuttles. **(Circle T-16 on Reader-Service Card)**



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3rd INTERNATIONAL EXHIBITION

TEXTILE MACHINERY

MILAN—12/21 September 1959

Section "G"—Stands N. 7024—7031

Limit-Switch Arm

An adjustable limit-switch arm for conveyors, overhead cleaners, and other machines to be automated has been developed by Square D Co., 4041 N. Richards St., Milwaukee 12, Wis. The length of the arm can be varied to fit any specific applications so that the switch can be mounted safely out of the path of moving machine parts.

Built for Square D's heavy-duty limit switches, the arm is made in three pieces. The roller section fastens to a length of ¼-in. key stock that is fastened into the section for the switch. The key stock may be any desired length. **(Circle T-17 on Reader-Service Card)**

Flexible Coupling

A shaft coupling for water-pumping stations has been developed by Dodge Mfg. Corp., Mishawaka, Ind. The rubber-tire coupling, Para-flex, works well in positions with angular and parallel misalignment because it absorbs torsional vibration and shock loads.

The coupling requires no lubrication or other maintenance. It is applied quickly and easily to shafts and gives the equivalent of a shrunk-on fit. The rubber-tire part can be replaced when worn without removing the flanges from the shafts. **(Circle T-18 on Reader-Service Card)**

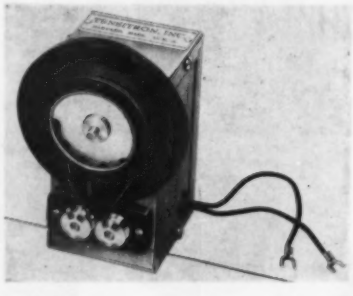
Potentiometer

A continuous voltage stabilizer that eliminates batteries, standard cells, and standardizing mechanisms is used in circular- and strip-chart electronic potentiometers being produced by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Wayne & Windrim Aves., Philadelphia, Pa.

The unit accurately regulates the d.c. reference-voltage supply to the measuring circuit to make standardization unnecessary. Delivery of constant rectified voltage from line supply by zener diodes and an ambient-temperature compensator enables the potentiometer to respond without interrupting the measured variable.

The stabilizer has a power supply consisting of a transformer, rectifier and filter, and regulator with temperature-compensated output. Units will be available to replace standardizing mechanisms of potentiometers now in use. **(Circle T-19 on Reader-Service Card)**

Tension for Filaments

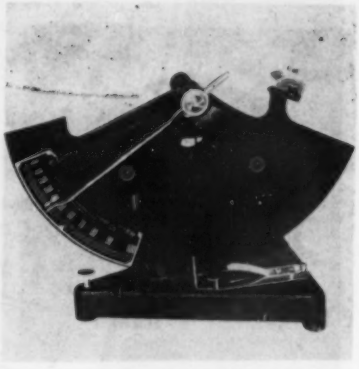


A tension designed especially for monofilaments, glass yarn, and cordage has been announced by Tensitron, Inc., Harvard, Mass.

Pinching, which damages certain types of filaments, is eliminated by guiding the filament around an expendable elastic cover that applies traction through serrations in the groove.

The elastic cover has two layers of contrasting colors. When the outer black layer wears down to the inner yellow layer, a new inexpensive cover is put on the pulley. **(Circle T-20 on Reader-Service Card)**

High-Capacity Tester



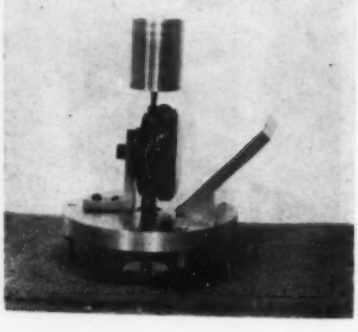
The capacity of the Elmendorf tearing tester has been increased to 6,400 grams in the model announced by Thwing-Albert Instrument Co., Penn St. and Pulaski Ave., Philadelphia 44, Pa.

The instrument has three ranges. The basic range is 1,600 grams; and by adding weights to the pendulum, the machine will handle 3,200-gram or 6,400-gram loads. **(Circle T-21 on Reader-Service Card)**

Thickness Gauge

The thickness of carpets under test can be measured by an instrument marketed by Custom Scientific Instruments, Inc., Kearney, N. J.

A 1-in. circular foot is connected with a dial indicator, and both are mounted on a platform that is supported on three needle-pointed legs. In operation, the needle points pierce the carpet and the foot rests on top of the carpet. The dial registers the carpet thickness directly. **(Circle T-22 on Reader-Service Card)**



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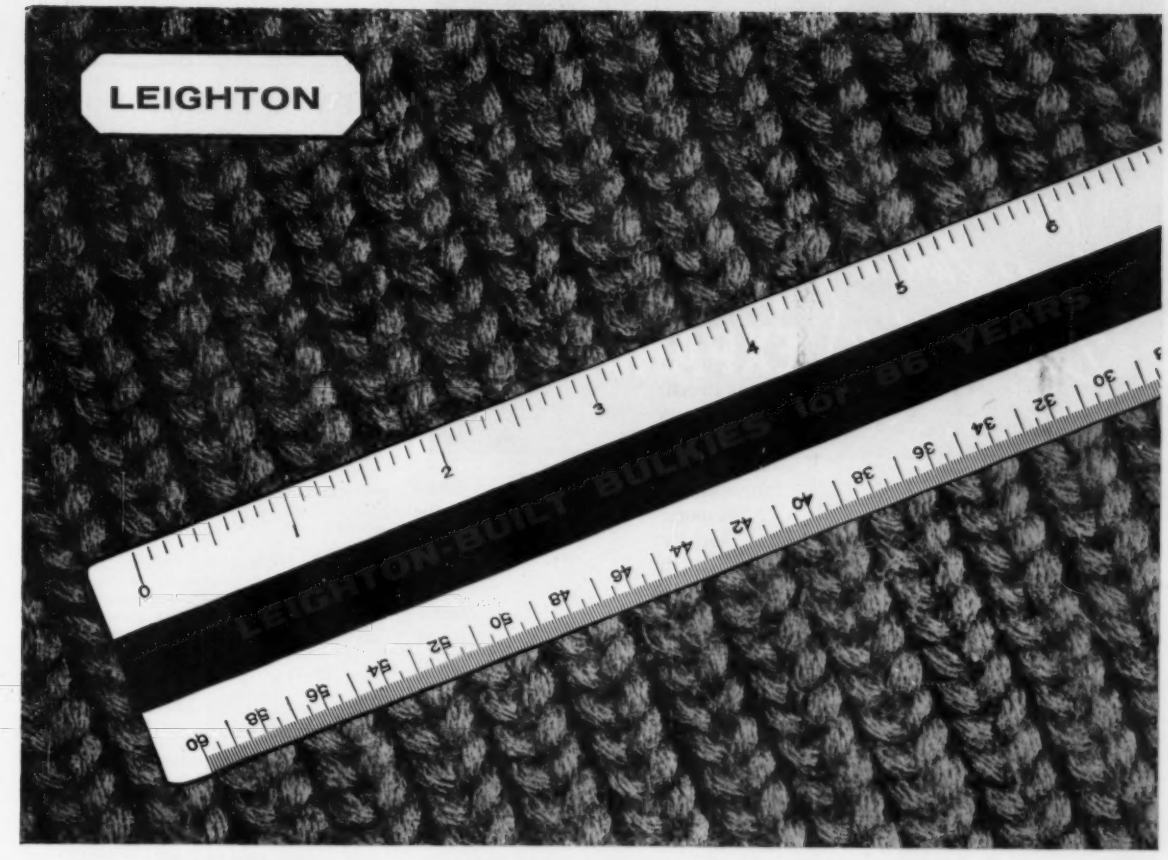
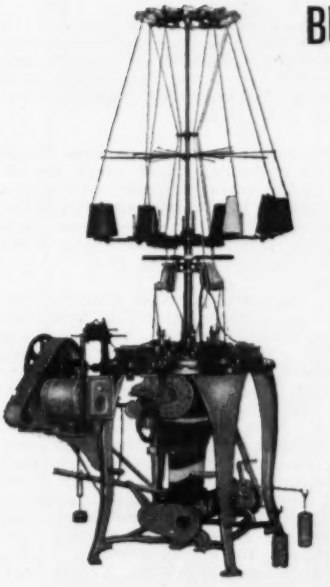
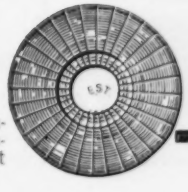


LEIGHTON MACHINES "MEASURE-UP" TO REAL BULKIE SPECIFICATIONS . . 2 TO 5 CUT



- **2 and 2½ cut-built one needle rack.**
- **3, 4 and 5 cut-built three needle rack.**
- **3 color stripes**
- **Ideal for Synthetic Yarns**
- **Half Cardigan, Full Cardigan and Nubb Stitches by simple manipulation.**

SAMPLES ON REQUEST



LEIGHTON MACHINE COMPANY

MANCHESTER, NEW HAMPSHIRE

MFGRS. OF CIRCULAR LATCH NEEDLE KNITTING MACHINES

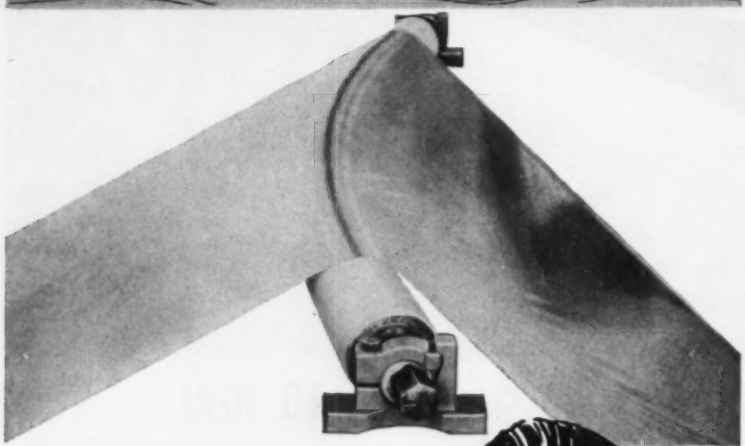
For 86 years Leighton has been in continuous operation developing and manufacturing knitting machines to meet customer demands.

CIRCLE 195 ON READER SERVICE CARD

Simplest Solution...

Wrinkles
Loss of width
Distortion

MOUNT HOPE "FREE-WHEELING" EXPANDERS



That's the report from modern mill men everywhere . . . MOUNT HOPE "Free-Wheeling" EXPANDERS have proved to be the simplest, surest way to keep cloth smooth, at full width, and free from distortion. One of many such cases is described in the free, illustrated folder shown below. Send for it. Find out how easily you can protect quality and profits with MOUNT HOPE "Free-Wheeling" Expanders. Fill out and mail coupon today.

Mount Hope

MOUNT HOPE MACHINERY COMPANY
50 Fifth Street, Taunton, Mass.

Please send free, illustrated folder on MOUNT HOPE "Free-Wheeling" EXPANDERS.

NAME ..... TITLE .....

FIRM .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

NEW LITERATURE

TEXTILE MACHINERY & AUXILIARY EQUIPMENT

Vacuum collection system—For collecting lint, fly, and broken ends at spinning frames is described in booklet that tells how the system increases operator efficiency, effects production savings, reduces waste, and provides cleaner working conditions. Bahnson Co. **(F-1)**

Web-drying machine — High-velocity dryer for textile webs is described in bulletin that contains operating data and drawings and explains in detail how webs can be dried more uniformly at a higher rate of production. J. O. Ross Engineering Div., Midland-Ross Corp. **(F-2)**

Continuous-bleaching range—For open-width piece goods and a bleaching range for tubular-knit goods are described in a booklet that gives specific operating speeds, cost savings, and other advantages. Proctor & Schwartz, Inc. **(F-3)**

Fabric-crabbing machine — Designed for crabbing fabrics by the piece but also capable of performing wet-decating and steam-blowing operations is described in bulletin from Birch Bros., Inc. **(F-4)**

Black-light lamps—For detecting oil and other contaminants, identifying man-made fibers, and predye inspection are described in bulletin entitled, "How to Use Ultra-Violet Light in the Textile Industry." Black Light Eastern Corp. **(F-5)**

Dye-cycle controller—Bulletin tells how Ful-Flex instrument incorporates eight basic features of control and describes an actual installation in a New York textile mill. Taylor Instrument Cos. **(F-6)**

Spindles for every purpose—Illustrated technical folder gives specifications, applications, and advantages of New Era, top-suspension-drive, ring-brake, roller-bearing, and ball-bearing spindles. Replacement Parts Div., Saco-Lowell Shops. **(F-7)**

Size applicator—Leaflet describes improved size applicator that holds selvage ends in place, reduces loom stops, and automatically controls squeeze-roll pressures according to slasher speed. Ira L. Griffin & Sons. **(F-8)**

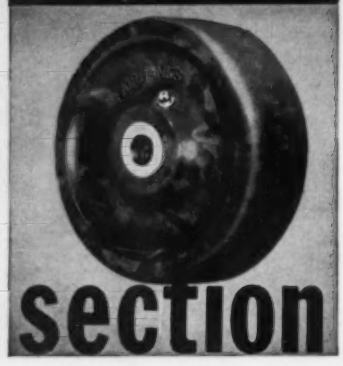
Electronic counters—Condensed catalog describes new line of high-speed electronic counters; also covers standard mechanical and magnetic counters and predetermining and convertible counters. Some of the counters are designed to measure picks, hanks, yardage, etc., by shifts. Veeder-Root, Inc. **(F-9)**

Long-fiber spinning frames—Ten-page bulletin describes drafting-roll sys-

MSL - MSL - MSL -

Now one wheel for any section of your plant

New Lamilon NYLON-REINFORCED ALL-PLASTIC WHEELS (patent pending)



Now, for the first time, you can standardize on one wheel for all your materials handling equipment in any section of your plant. Regardless of the types of floors or floor conditions, Fairbanks new "LAMILON" Wheels will:

● Protect your floors. "LAMILON" Wheels stay smooth and concentric, will not mar or mark, because of exceptionally high impact strength and abrasion resistance.

● Show no affect from oils and greases and a very high resistance to most chemicals. "LAMILON" Wheels have a water absorption factor almost as low as high quality rubber and will not deteriorate in wet floor conditions.

● Roll easier with alloy steel roller bearings, hardened steel outer race and provision for pressure lubrication. "LAMILON" Wheels roll easier than semi-steel wheels in most instances.

● Last longer and give more dependable service than any other plastic wheel.

"LAMILON" Nylon-Reinforced All-Plastic Wheels are available in sizes 3 through 12 inches and can be furnished with thread-tight thread guards.

Fairbanks complete line of industrial caster and truck wheels includes the finest vulcanized rubber tired wheels (sizes 3"-18") on the market, solid rubber wheels (sizes 2"-6") and semi-steel wheels (sizes 2"-16").

FAIRBANKS "LOCKWELD" CASTERS WITHOUT KING-PIN

Easiest swiveling, longest lasting. Unique patented "LOCKWELD" construction eliminates king-pin, chief source of caster failure.

Illustration: Series "23" double ball race swivel casters, sizes 3"-8". Single ball race swivel casters, sizes 2"-6" and matching rigids available.

THE **Fairbanks** COMPANY

Executive Office — 393 Lafayette Street, New York 3, New York

Valves • Dart Unions • Casters • Trucks • Wheels

●520 Atlantic Ave., Boston 10, Mass. ● 393 Lafayette Street, New York 3, New York ●15 Stanwix St., Pittsburgh 22, Pa. ● 202 Division St., Rome, Ga. ● **Factories**—Rome, Georgia and Binghamton, N. Y.

tem, top-roll suspension, roll weighting, balloon control, bobbin build, and other features of the Arrow long-draft long-fiber spinning frame. Roberts Co. (F-10)

CHEMICALS & SUPPLIES

Back coatings and binders—Three bulletins that describe back coating for upholstery and drapery fabrics, binders for nonwoven fabrics, and penetration of coatings from the standpoint of chemicals needed to produce certain effects are available from B. F. Goodrich Chemical Co. (F-11)

Decorative surfacing—Of textiles with Metalflake, a new metallic sparkle product, is discussed in a folder that contains actual sizes, shapes, and colors of the material in widths of 1/64 in. and up. Dobeckmun Co., Div. of Dow Chemical Co. (F-12)

Antistatic finishes for Acrilan—A list of 70 antistatic agents and their methods of application in finishes for Acrilan fabrics is available from Chemstrand Corp. (F-13)

Polymer products—An 8-p. directory of polymer products and their specific properties and uses is available from Borden Chemical Co. (F-14)

Caprolactam monomer—Used in the preparation of nylon 6 for textile fibers is described in a revised technical bulletin that covers physical and chemical properties and use applications. Chemical-reaction routes to commercial possibilities are explained. National Aniline Div., Allied Chemical Corp. (F-15)

Fatty acids—Revised edition of "Fatty Acids in Modern Industry" includes up-to-date specifications on the Groco line of stearic, oleic, and other acids and gives a list of standard analytical test references. A. Gross & Co. (F-16)

Acid fulling and scouring—Technical data and suggested applications for Sterox 21K, a new surfactant specifically designed for use as an acid fulling and scouring agent for woolen fabrics are available in a booklet from Inorganic Div., Monsanto Chemical Co. (F-17)

Silicone products—Used for water repellents and textile finishes are discussed in 8-p. illustrated catalog that covers typical properties, benefits, and uses. Silicone Products Dept., General Electric Co. (F-18)

Warp size — For spun man-made-fiber yarns is described in technical data sheet that includes detailed information on properties, range of viscosities, and applications from A. E. Staley Mfg. Co. (F-19)

Borohydrides — That selectively and quantitatively reduce the aldehyde groups in oxidized cellulose and keep textile materials from yellowing are described in a 16-p. booklet from Metal Hydrides, Inc. (F-20)

STOP VIBRATION!

PHOTO COURTESY WHITIN MACHINE WORKS

Look for the RED AND WHITE STRIPES*..

They identify *genuine* VIBRA-MOUNT* felts . . . the finest vibration insulating material ever developed, *absorbing* up to 85% of transmitted vibration.

Write for full technical details.

*VIBRA-MOUNT and the Red and White stripes are trademarks for Vibration Absorbing Felt Pads made by American Felt Company.

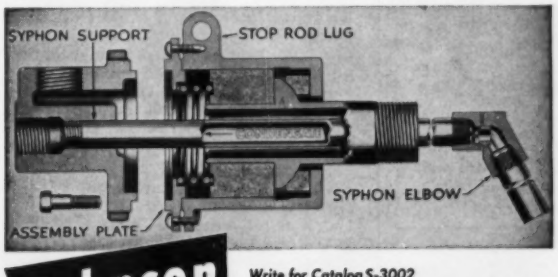
American Felt Company

9 Glenville Road, Glenville, Connecticut

CIRCLE 251 ON READER SERVICE CARD

TRY THIS on your Dry Cans and 30" Slasher Cylinders

We'll gladly furnish a pair of these units for 90-day obligation-free trial in your mill. The Type SB2P is self-supporting, completely packless, needs no lubrication or adjustment. The Johnson Syphon Elbow permits the use of two straight pipes instead of an unwieldy curved syphon pipe, is hinged to pass right through the joint.

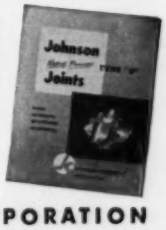


Johnson ROTARY PRESSURE Joints

First in the Textile Industry

Write for Catalog S-3002

Shows self-supporting Johnson Joints for all needs . . . on print cans, calenders, compressive shrinkage ranges, big 5' and 7' cotton slashers, dry cans, etc.



THE JOHNSON CORPORATION

814 Wood St., Three Rivers, Mich.

CIRCLE 252 ON READER SERVICE CARD

NEW BENDIX SPIN-MASTER BOBBIN HOLDER

only 4 parts to assemble . . . no tools!

New simplified design . . . with only four, easy-to-assemble parts! New modern plastic construction . . . for lighter weight, greater efficiency! That's the *new* Bendix Spin-Master—the most modern bobbin holder in the textile industry!

By replacing steel tubing with Kralastic, a tough, durable plastic, the Spin-Master is lighter, less complex, lower priced. A new die-cast, all-purpose dust cap incorporates a positive locking device that assures uniform tension . . . permits yarn to flow freely from the full or partly full package.

Order the new, improved Bendix Spin-Master, or that long time favorite of the textile industry—the Eclipse* Bobbin Holder—from the nearest supplier listed below.

*REG. U. S. PAT. OFF.

ALL OTHER INQUIRIES TO:

Bendix-Elmira

Eclipse Machine Division • Elmira, New York

Bendix AVIATION CORPORATION

Odell Mill Supply Co., Greensboro, N. C. North Carolina • Virginia	Export Sales: Bendix International, 205 E. 42nd St., New York City
Greenville Textile Supply Co., Greenville, S. C. South Carolina • Georgia • Alabama • Tennessee	FURNISHED AS ORIGINAL EQUIPMENT BY LEADING TEXTILE MACHINE MANUFACTURERS

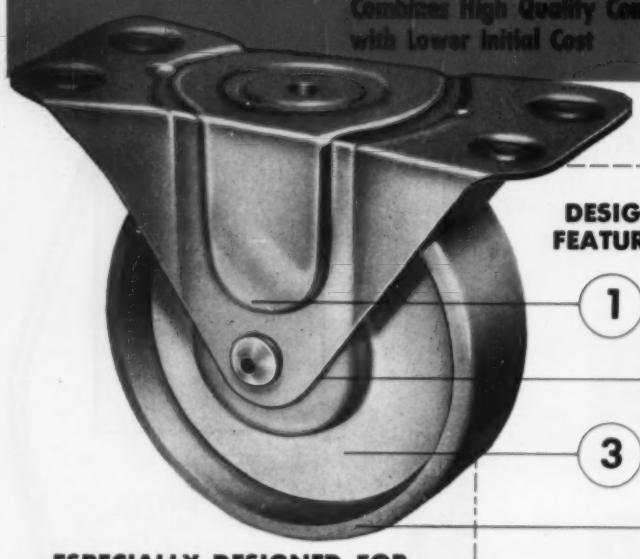
CIRCLE 199 ON READER SERVICE CARD

NOELTING
Faultless
Casters

New!
Faultless Textile Casters

500 SERIES • LIGHT DUTY

Combines High Quality Construction with Lower Initial Cost



DESIGN FEATURES

1 Drawn steel construction deeply corrugated to carry maximum rated loads with a substantial safety margin.

2 Ball bearing assembly in hub to absorb side thrust.

3 Deep drawn thread guards fit snugly between wheel hub and caster horn — assure maximum protection, trouble-free operation.

4 Semi-steel wheel has fully machined face with generous radii at tread edge.

ESPECIALLY DESIGNED FOR

- **DOFF BOXES**
- **LAP TRUCKS**
- **ROVING TRUCKS**

Here, in this new Faultless 500 Series Textile Caster all of the features textile men require—deep drawn thread guards and lower initial cost—are combined to give a rigid caster that assures freedom from snagged threads that stop production. Sealed wheel bearings available if desired. Load capacity 175 lbs.

Faultless castered equipment can lead the way to reduced costs and increased production in your own plant. Casters for light, medium, heavy and special duties are included in the extensive Faultless line.

ASK YOUR DISTRIBUTOR

Your nearby Faultless Industrial Distributor maintains a substantial inventory of Faultless Casters for immediate delivery. He and one of the strategically located Faultless Sales Engineers are available to work with you on every handling problem in your plant. Both are listed in the Yellow Pages of your phone book under "Casters," beneath the Faultless heading. Write for complete information.

Faultless Caster Corporation Evansville 7, Indiana

Representatives in Atlanta, Baltimore, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Grand Rapids, Greenville, S. C., High Point, Indianapolis, Los Angeles, New Orleans, New York, Philadelphia, Portland, St. Louis, Washington, D.C., Canada: Stratford, Ontario.

ENGINEERING & MAINTENANCE

Centrifugal pumps—By the hundreds are described in a new jumbo-size "Pic-A-Pump" catalog that contains all kinds of data designed to help you select the pump best suited to your needs. Contents include a selector guide, performance curves, dimensions, range charts, and prices. Allis Chalmers Mfg. Co., Box 512, Milwaukee 1, Wisc. **Copies will be sent only on requests made on company letterheads.**

Proper lights for color matching—"Rx for Color-Blind Light Sources" is the title of a brochure that tells what kind of lights to use for matching, shading, and grading colors. A cartoon technique and installation photos are featured. MacBeth Daylighting Corp. (F-21)

Industrial waste—Of all kinds is discussed in Book 2617, "Water, Sewage, and Industrial Waste Treatment Equipment." The 20-p. book contains illustrations of sanitary engineering equipment, flow diagrams, and engineering data. Link-Belt Co. (F-22)

Linear conversion table—For handy reference by engineers, purchasing agents, and others who have occasion to convert inches and fractions into decimal parts of a foot is available from Tubular Products Div., Babcock & Wilcox Co. (F-23)

Arc-welding manual—For welders and instructors describes welding processes, safety practices, equipment, accessories, metals, and metal identification. American Welding Society. (F-24)

Adjustable-speed drives—Booklet describes new line of ¼- to 25-hp. Polydyne drives and discusses principles of operation, rating tables, mounting positions, and benefits. General Electric Co. (F-25)

Electric clutches and brakes—Are described in detail in Electro-Sheave brochure that tells how a new clutch-pulley can be installed on 1- to 25-hp. motors. Included are sections on operation, selection, and specifications. Warner Electric Brake & Clutch Co. (F-26)

Floor cleaning—"Industrial Floors: How to Clean and Care for Them," is the title of a booklet that covers 50 years of industrial-cleaning experience and contains charts, lists of cleaning compounds, and descriptions of cleaning methods. Oakite Products, Inc. (F-27)

"Report to Management"—Points out how, when, and where thousands of dollars can be saved through the application of modern lubrication methods. Textile applications are described and actual dollar savings are cited. Lincoln Enginering Co. (F-28)

Textile-machine lubricator—That automatically services up to 73 bearings

INTERNATIONAL
TEXTILE MACHINERY EXHIBITION
MILAN
September 12-21, 1959

AUTOMATION PAYS

with our advanced-model machinery for carding and coarse spinning, wadding and felt industry.

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to visit us
in Hall G
at the Collective Booth
of the UNIONMATEX

MaK

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Kiel
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CIRCLE 201 ON READER SERVICE CARD 201

IMPORTED YARNS

combining excellent working qualities for creating distinctive functional beauty

THE SOURCE OF THESE YARNS IS FRANCE & WEST GERMANY

TRADE NAME	TYPE YARN	COUNTS
Cotton	Egyptian Karnak	1's through 160's
Cotton	Egyptian Sacel	Plied and Singles
Cotton	Peru	Mercerized, Gassed, Bleached.
	American	Dyed and Natural*
Crylor	Acrylic fibre	4's to 32's (Amer. Cotton System)
Tergal	Polyester fibre	" "
Rilsan	Polyamidic Resin	3's to 47's (Amer. Cotton System)

* All counts on American Cotton System. Processes referred to apply to all counts. Single yarns available only in counts from 1's to 80's.

RILSAN-LINEN and RILSAN-TERGAL BLENDS IN SEVERAL COUNTS

WRITE FOR WORKING SAMPLES.
OUR TECHNICAL SERVICES, TOO, ARE AVAILABLE.

LOUIS S. EDERER CO.

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CIRCLE 253 ON READER SERVICE CARD

AT YOUR SERVICE

SPECIALIZED ENGINEERING
SPECIALIZED EXPERIENCE
SPECIALIZED MACHINERY
FOR
TWISTING • FORMING
STRANDING • BUNCHING
COTTON • JUTE • MANILA • SISAL
NYLON • DACRON • ORLON • SARAN
PAPER • POLYETHYLENE • GLASS

TEXTILE • WIRE • CORDAGE and OTHER INDUSTRIES

HASKELL-DAWES
MACHINE CO., INC.
2231 E. Ontario Street
Philadelphia 34, Pa.

on X-2, XD, and XP-2 looms is described in illustrated booklet; the system also can be applied to knitting machines. Bijur Lubricating Corp. (F-29)

Sanitary Maintenance—A 20-p. booklet tells how an individually engineered program of sanitary maintenance can be set up to meet your requirements. Custodial work, automatic controls, and follow-through are covered. Puritan Chemical Co. (F-30)

GENERAL

Cloth "quality level"—Can now be established by following the standards set forth in a Manual of Defects and Imperfections that defines common defects, establishes a "defect points" schedule, and gives a formula for converting defect points into quality level. Published jointly by National Assn. of Shirt, Pajama, and Sportswear Manufacturers and the Textile Div., American Society for Quality Control. (F-31)

Dry-chemical fire extinguishers—Are described and illustrated in brochure that tells how to use and recharge 2½- to 30-lb. models. Also discusses various types of fires and chemicals needed to extinguish them. Walter Kidde & Co. (F-32)

Cotton-price chart—For 1959-60 American Upland cotton that shows how to figure purchase, resale, and loan values on a basis of 1-in. Middling Memphis lint is offered by National Bank of Commerce. (F-33)

Fiber identification on labels—The Textile Fiber Products Identification Act has been interpreted and analyzed in a booklet that tells what and how information should be put on textile labels. Soabar Co. (F-34)

Overhead materials handling—Revised "Engineering and Application Data" covers all types of equipment and gives detailed studies of track design, peening, and stresses. Many photographs are included. Cleveland Tramrail Div., Cleveland Crane & Engineering Co. (F-35)

Transistorized electronic computer—Booklet outlines speeds, capacities, and over-all performance qualifications of the Honeywell 800 system and gives specific examples of its uses and economy. Datamatic Div., Minneapolis-Honeywell Regulator Co. (F-36)

Better packaging—A 48-p. catalog containing many suggestions for improving packaging and shipping methods and showing full line of strapping equipment is available from Signode Steel Strapping Co. (F-37)

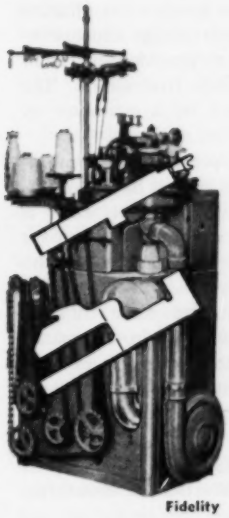
Cotton lift truck—Bulletin describes truck especially designed to handle cotton bales. Features include guards to keep lint out of operating mechanisms and a spark-arresting exhaust system. Hyster Co. (F-38)

Air transportation—Folder showing latest route patterns of 13 local-service

Scott & Williams

Supreme

Tompkins



Fidelity

Excellence Doesn't "Happen" — It is *PRODUCED*

Here at IVES, we never leave anything to chance. For 89 years, the finest steel, expert craftsmanship and infinite care have gone into the manufacture of every needle and knitting machine part that has left this plant.

That is why IVES' products have always been known for their excellence in design, workmanship, and wearability.

IVES' replacement parts are tailored to fit *exactly* the machines for which they are intended:

Supreme • Fidelity • Tompkins • Kidde
Cooper • Brinton • Wildman • Crane
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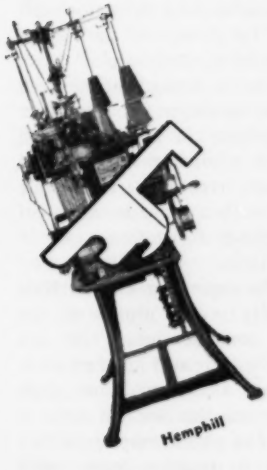
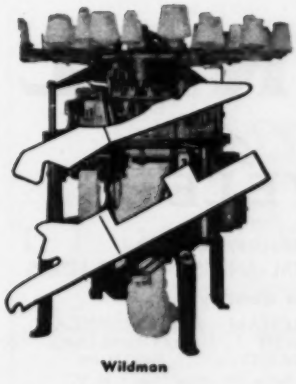
THE LOYAL T. IVES COMPANY, INC.
NEW BRUNSWICK, N.J.



Hemphill



Wildman

Bentley

CIRCLE 203 ON READER SERVICE CARD 203

Careful records prove that National-Sterling Ring Travelers not only upgrade production but boost yarn quality to new levels. Here's why:
Our sales engineers make field tests in your own mill before recommending any particular weight or style of traveler. No detail is left to chance . . . no "make-do" substitutes are considered. The final choice is the *right* traveler — a traveler which will consistently deliver more pounds of first class yarn, at higher spindle speeds, with fewer ends down. And the records prove it.

Why not prove it for yourself? Whether you're running cottons, wools, synthetics or blends, let an experienced National-Sterling Engineer help you select the *right* ring traveler for your particular requirements right in your own mill. Write, wire or phone National Ring Traveler Company and Sterling Division, 354 Pine Street, Pawtucket, R. I. Southern Office and Warehouse: P. O. Box 293, Gaffney, South Carolina.

NATIONAL
Sterling
RING TRAVELERS

F. L. CHASE, JR., *Pres. & Treas.* **L. E. TAYLOR,** *Southern Mgr.*
FOR SPINNING AND TWISTING ALL NATURAL AND SYNTHETIC FIBRES
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air lines to 500 communities is available from Southern Airways, Inc. **(F-39)**

Supervisor development—Is covered in "Supervisory Growth," a comprehensive brochure that contains generous samples of actual motivating material for foremen and supervisors. Scope includes the handling of job problems and personal development of textile supervisors. Elliott Service Co. **(F-40)**

POINTERS FOR SUPERVISORS

CONTINUED FROM PAGE 173

Some employees bring to the job the sort of needs that no job (and no supervisor) could adequately fill. A job cannot provide satisfactions to an employee whose levels of aspiration are completely unrealistic, and it cannot be expected to provide relief from all sorts of outside frustrations. The supervisor cannot be a guarantor of happiness.

Even if employee needs are reasonable they cannot be met by the supervisor when satisfaction for them is sought through aspects of the job over which the supervisor has little or no control. The supervisor does not have freedom in the matter of the pay scale or, in many instances, in the matter of promotion, to cite examples. His opportunity to fill needs through these means is therefore limited.

The nature of a job is often in itself a source of satisfaction or dissatisfaction. What a man does on the job and the use to which he puts his talents will mean the satisfaction or frustration of a fundamental drive for self-expression, for doing, as the saying goes, "something worth while."

Here again the strength of the need varies from employee to employee; but the tendency in some plants to continue the subdivision of jobs into the simplest, repetitive, short-cycle tasks is generally a move in the direction of employee frustration.

Again, the supervisor can do little about it. He is not usually in the position to construct jobs. They are made for him. Even if he knew how, he could not alone build into them the satisfactions that the job tasks in themselves can give to employees.

Evidence is emerging from recent

studies to indicate that some employees are making only a limited commitment of themselves to their jobs and their employers in return for the limited satisfactions they feel they derive from their employment. Their primary "involvement" tends to be or the outside; a large part of the primary satisfactions is there.

This tendency might seem to reduce the supervisor's responsibility for satisfaction of employee needs. It actually makes his job much more trying.

If he is dealing with employees whose attitude is to give a little to receive a little, he is not likely to find the loyalty, dependability, cooperativeness, and other pleasing displays of virtue that he had come to believe an employee owed to his employer. This attitude or any other unfavorable attitude, if strong, is not something the foreman can change by appeals to logic or reason.

So much for the supervisor's limitations in the matter of satisfying employees. The prospects are not quite as hopeless as this account suggests.

The supervisor would do well, however, to push the large needs of employees to the back of his head. He can still motivate his employees to reach a good level of morale and production if he successfully solves the smaller problems that are within his jurisdiction, if he can recognize employee needs in the everyday, run-of-mill situations and can come up with solutions that satisfy those needs or at least take them into account.

There is still the necessity for listening to employees and understanding what they have to say, for treating them with respect as human beings, for recognizing individual differences among them, for clarity in matters of job instructions and standards of performance, for being a gentleman.

There is still room for information to employees, discussions with employees, participation by employees—only small, modest matters, perhaps; but the foreman is not responsible for his employees' total happiness with life. He cannot assure it; to attempt it is a presumption and an invitation to disappointment.

Even in small matters, failure and conflict are inevitable to some extent. The supervisor must live with these stresses. The struggle itself must somehow become a source of satisfaction to him; it is never over.

ROLL SLIPPAGE

CONTINUED FROM PAGE 51

frames designed for cotton and with no facilities for adjusting the distance between the back rolls and the next pair

2. Staple that is too long for the drafting system
3. Reduction of pressure on the back roll when the rolls are spread
4. Break draft that is too low
5. Spinning yarn from hank roving that is too coarse

Forward slip of the back roll is more prevalent than is commonly suspected. This condition occurs when the drafting force increases as the staple length approaches the fixed distances between the back two lines of rolls. The increase in force is particularly large when the distance

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is the specialty of L. F. Dommerich. Since 1840, our comprehensive financial service has helped firms attain greater profits without financial headaches. Whether your business is in the $300,000 or the $30,000,000 class, a Dommerich plan, tailored to your needs and your goals, can help it thrive and grow.

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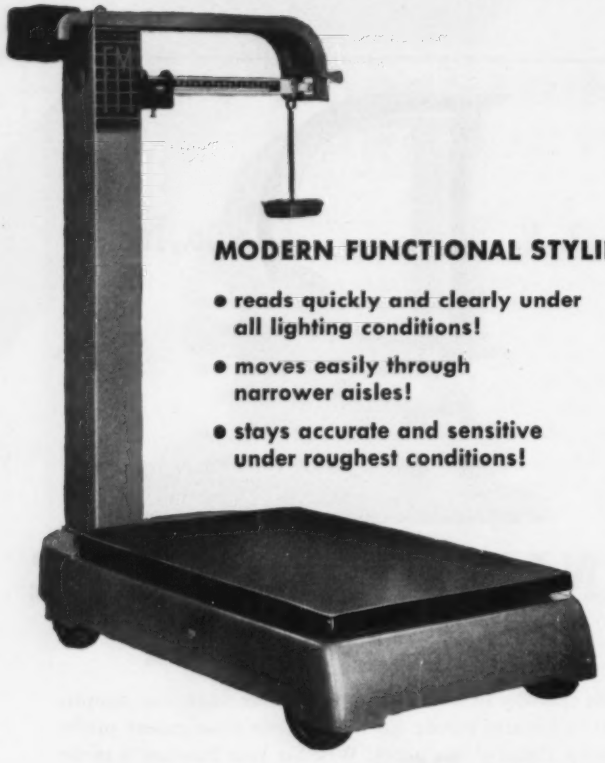
CIRCLE 205 ON READER SERVICE CARD 205

NEW FAIRBANKS-MORSE

Portable Platform Scale



MODERN FUNCTIONAL STYLING

- reads quickly and clearly under all lighting conditions!
- moves easily through narrower aisles!
- stays accurate and sensitive under roughest conditions!

Designed for your most exacting requirements—built for years of heavy-duty use—this new Fairbanks-Morse Model 1124A Portable Platform Scale helps speed your operations through faster, more accurate weighing!

Note the big, clear beam design that promotes quicker reading—the new square weights for easier handling! Check the new concealed wheels, the compact overall width—important for fast handling in congested areas. Notice the absence of check rods, to eliminate binding. From top to bottom this is a handsome, durable scale designed to use—built to last—a worthy successor to the hundreds of thousands of famous Model 1124 Scales proven throughout industry! Capacity 1000 lbs. Write Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois, for new Model 1124A Catalog.

See Sweet's Plant Engineering File for full line of F-M Scales.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL, DUAL FUEL AND GAS ENGINES • ELECTRIC MOTORS
GENERATORS • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS

between the roll nips is near the staple length of the stock.

Another cause is the increased mean fiber length of man-made fibers compared to the mean fiber length of cotton of equivalent staple. The drafting force also is high when the draft is low, which is usually the case between the back and succeeding roll on cotton-system frames.

With a staple length almost equal to the distance between the roll nips, coarse roving, light pressure on the back roll, and a low draft, the drafting force may become so great that it causes the back top roll to revolve at the same surface speed as the succeeding roll. When this action occurs, the total draft of that particular set of rolls is reduced in proportion to the amount of break draft.

EQUIPMENT & SUPPLY NEWS

CONTINUED FROM PAGE 194

Lubricating System

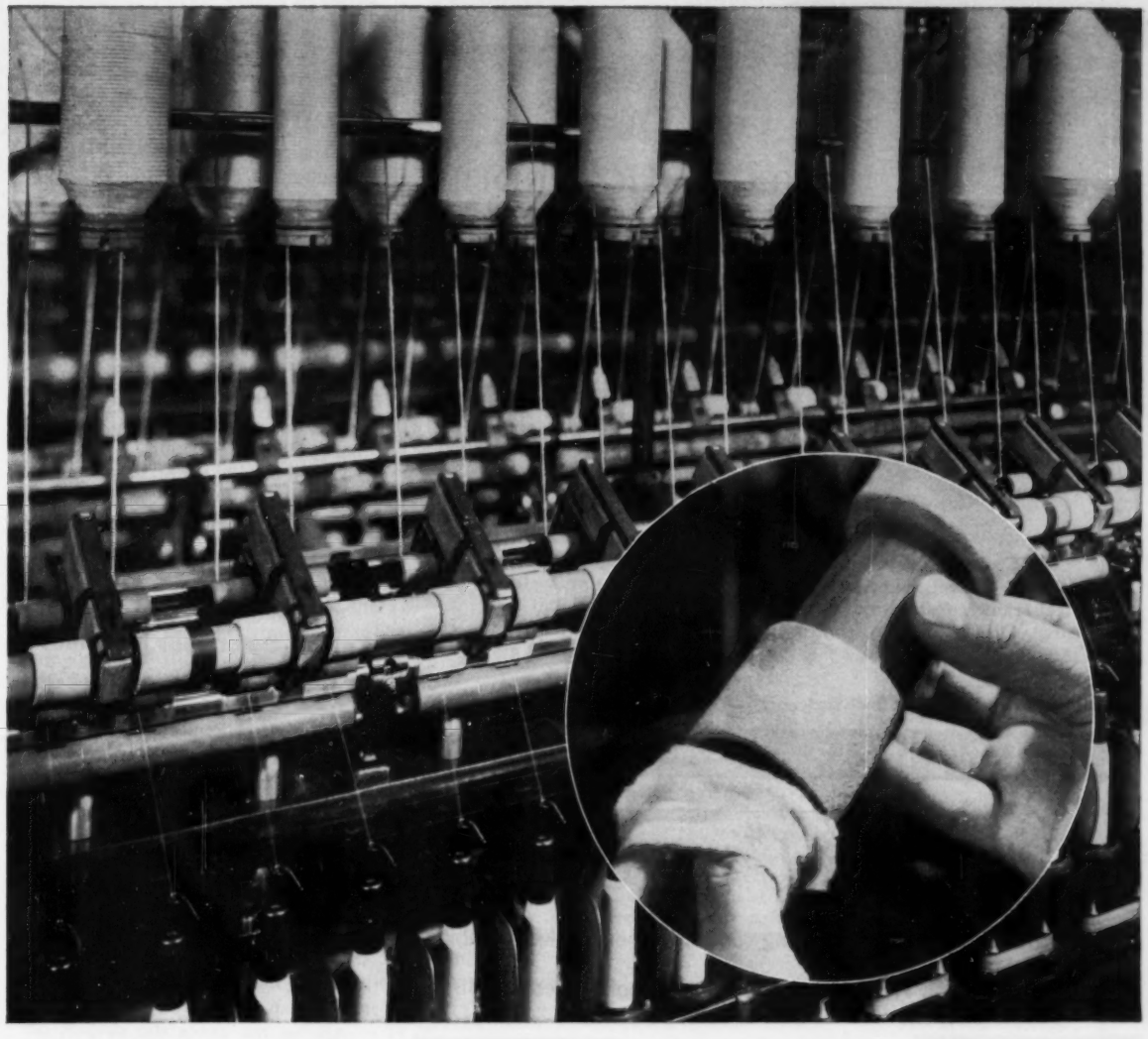
A miniature injector system for automatically lubricating textile production machines has been introduced by Lincoln Engineering Co., Div. of McNeil Machine & Engineering Co., 4010 Goodfellow Blvd., St. Louis 20, Mo. Called the Micro-Measure system, it premeasures and injects fluid lubricants as small as 200-millionths of an ounce in automatic cycles as often as every minute.

An automatically controlled air-operated pump supplies refinery-pure lubricant to small injectors at a predetermined rate. The system maintains a constantly uniform oil film on all bearing surfaces with no overflow or dripping. **(Circle T-23 on Reader-Service Card)**

Drip Sight Feeder

A high-pressure drip sight feeder for corrosive conditions under a temperature range of −0 to +750° F. has been announced by Jerguson Gage & Valve Co., 80 Adams St., Burlington, Mass. A ⅛-in.-dia drip tube extends into the upper part of the chamber of a transparent flow indicator to make drop formation easily visible to an operator.

The feeder has a pressure-temperature rating of 2,000 psi. at 100° F. and 1,100 psi. at 750° F. It is available in ½- or ¾-in. female or 1-in. male connections. Chambers and



Your picking costs can be reduced 50% or more with Accotex NK-770 Clearers

Better cleaning . . . faster picking . . . much longer life: you get all these money-saving benefits when you switch to Accotex NK-770, a new expanded rubber clearer cover developed by Armstrong.

This resilient new material can't pack down or fray. Waste builds up uniformly across its finely textured surface—and can be removed in one piece with a single, quick motion of the hand.

NK-770 clearers can be picked *on the frame.* Mechanical cleaning is eliminated. And most mills find that NK-770 enables them to lengthen picking intervals substantially . . . and to reduce picking crews accordingly.

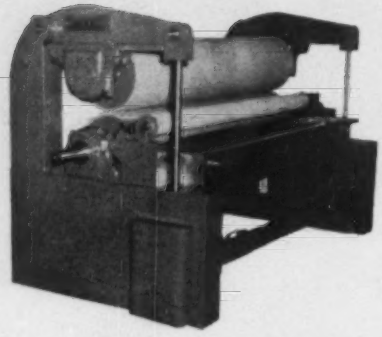
The economies made possible by NK-770 can add up to a 50% saving in picking costs . . . a saving that is truly attractive when you consider that NK-770 costs no more than cloth covers.

Prove on your own frames how NK-770 clearers compare with the covers you are now using. Your Armstrong man will be glad to arrange a test. Call him or write Armstrong Cork Company, Industrial Division, 6909 Dauphin Street, Lancaster, Pennsylvania.

Armstrong TEXTILE SUPPLIES

J. E. CARROLL & CO.

HEAVY DUTY
PNEUMATIC PADDER



New and improved operating features include equalized pressure control, spherical roller bearing roll mounting, welded steel frame construction. Available with several optional features. Other models to choose from. We sincerely solicit your inquiries.

CYLINDER DRYERS • PADDERS • COOLING CYLINDERS • DYE TANKS

J. E. CARROLL & CO. LOWELL, MASSACHUSETTS

CIRCLE 254 ON READER SERVICE CARD

a new trend* in coolers

*NO EXPOSED FITTINGS • plumbing connections concealed in cabinet

*SET TIGHT TO THE WALL • no space behind cooler to collect dirt

new WALL-TITE

Makes all other floor-type coolers passe. Not only far more sanitary but takes less floor space and is easier to install.

new WALL-MOUNT

It's a Halsey Taylor first! Mounts on wall, off the floor. Compact, easy to keep clean, no corners or crevices to catch the dirt.

Both of these models come in 6, 11 or 16 gallon capacities. Write for further information

See Sweet's or consult the Yellow Pages

The Halsey W. Taylor Co., Warren, O.

Halsey Taylor ®

12

covers are rustproof. **(Circle T-24 on Reader-Service Card)**

Pipe Wrench

A compound-leverage wrench made by Ridge Tool Co., Elyria, Ohio, lets one man do the work of two and two men do the work of four. The wrench tightens or loosens frozen fittings with ease.

Pressure applied on the extra-sturdy malleable handle is multiplied by two as the adjustable hook jaw turns the pipe in one direction while the offset chain-vise head grips the fittings and exerts an equal pressure in the opposite direction.

The tool fits into hard-to-reach places and is available in four sizes for 2- to 8-in. pipe. **(Circle T-25 on Reader-Service Card)**

Knitted-Outerwear Machine

Speed of over 90 courses per minute and a wide variety of designs are two of the important features of a full-fashioned outerwear machine, Model E, announced by William Cotton Ltd. (a member of the Bentley Group), Loughborough, England.

The machine operates from one set to another without attention to the controls. It can be operated automatically for mass production of standard fabrics, and it can also be operated manually for smaller quantities of special garments.

Among the automatic devices are mechanisms for resetting the selvage stops, pressing off the entire piece, positioning yarn before knitting starts for the next piece, and cutting the connecting yarn.

Fabric takedown requires no attention from the operator. Each piece is drawn off flat and can be examined by the operator at any time during knitting. Tension is adjusted automatically and is in proportion to the width of the fabric.

Automatic rib transfer is a normal operation, and either round- or V-cut neck is possible. **(Circle T-26 on Reader-Service Card)**

Inorganic Zinc Coating

An inorganic zinc coating that protects steel against rusting has been

marketed as Carbo Zinc No. 11 by Carboline Co., 32 Hanly Industrial Court, St. Louis 17, Mo.

The product bonds well to blasted steel and dries within 20 mins. of application to a water-insoluble coating that resists temperatures in the —20 to 750° F. range. The coating is suggested for stacks and for ironwork that is exposed to high humidity and atmospheres charged with salt spray. **(Circle T-27 on Reader-Service Card)**

Carding-Spinning Lubricant

A water-soluble anionic carding and spinning lubricant, developed in England, is now available to U. S. manufacturers through Arnold, Hoffman & Co., 55 Canal St. Providence, R. I.

Known as Cirrasol AR, the new product is suitable for use in the processing of carpet blends containing viscose rayon and protein staple fiber on the woolen system.

On the modified cotton and flax systems, the product can be used as a lubricant for coarser types of viscose rayon staple and blends of viscose rayon with wool. Since the lubricant is water soluble, the scouring prior to dyeing need only be very mild and in some cases may be omitted entirely.

The lubricant completely removes olein or oil from tightly twisted carpet yarns. With viscose-rayon carpets, this feature is doubly important because viscose rayon "wicks" liquids much more readily than wool and soiling may be absorbed from the carpet backing material. When Cirrasol AR is used as a soil-resisting agent, the dyed carpet can be treated in a solution of the product in the dyeing machine or afterwards by spraying. **(Circle T-28 on Reader-Service Card)**

Nylon Castings

Nylon machine parts such as gears, rolls, etc. are being made in sizes up to 2 ft. by Reeves Bros., Inc., 1071 Avenue of the Americas, New York 18, N. Y. The materials, Reevcast, are being made in a new casting method suitable for mass production.

The castings have greater density than usual nylon coatings and there-

DIRT-RESISTANT Tennantized floor allows faster sweeping. Saves manhours.

Why most money-making mills have TENNANT-maintained floors

Mills that make money *today* usually know their maintenance costs to a penny.

That's why about 9 out of 10 successful mills, large and small, use the TENNANT SYSTEM of Floor Maintenance.

They know, from their own cost records, that this system provides clean, bright floors *at the lowest cost per sq. ft. of any floor maintenance method* available today. Here's why:

SAVES MANHOURS—*Tennantized* floors have 3 times the dirt resistance of most textile floors. Saves cleaning time, cuts sweeping costs, etc.

How the TENNANT SYSTEM cuts floor care costs...

1 **SAVES TIME.** Dirt is easily wiped off surface.

2 **SAVES FLOOR SEAL.** Tennantized floors seldom need refinishing.

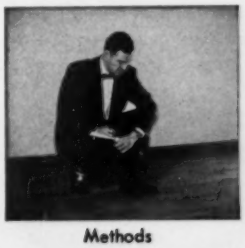
3 **SAVES BUFFING.** New method brightens floor; cuts buffing time as much as 80%.

REQUIRES LESS FLOOR SEAL—New custom-fitted TENNANT seals *last longer than any comparable materials we know of.* Cuts annual seal costs and recoating expense. WRITE TODAY *for full details. G. H. Tennant Co., 737K N. Lilac Drive, Minneapolis 22, Minn.*

TENNANT

The Textile Industry's Most Widely Used

FLOOR MAINTENANCE SYSTEM



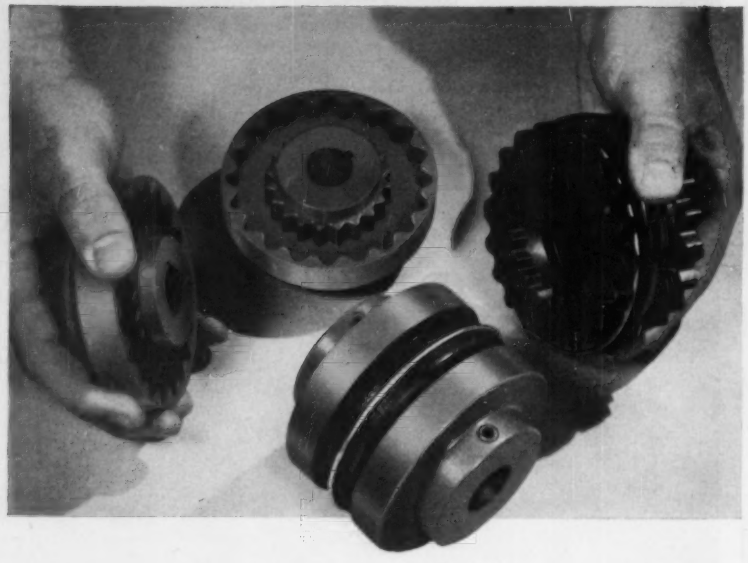
Methods

Machines

Materials

FLOOR MAINTENANCE SYSTEMS

CIRCLE 209 ON READER SERVICE CARD



"Sure-Flex" Coupling's unique design, 4-way flex are . . .

. . . A "SURE CURE" FOR SHOCK, VIBRATION, SHAFT MISALIGNMENT

Unique design and 4-way flexing action enable Wood's "Sure-Flex" Couplings not only to absorb all types and combinations of angular and parallel misalignment and end-float . . . but from 5 to 15 times more shock and vibration than other leading flexible couplings. There are only four basic parts which lock together without clamps or screws, tightening securely under torque to provide smooth, dependable power transmission. There is no metal-to-metal contact, no wear, no need for lubrication or maintenance. "Sure-Flex" Couplings are easily installed, unaffected by abrasives, dirt or moisture. Operation is noiseless. Get all of the facts.

WRITE FOR BULLETIN 10100A.

V-BELT DRIVES • VARIABLE SPEED DRIVES • TIMING BELT DRIVES • CARD DRIVES • FLEXIBLE AND RIGID COUPLINGS • FLYWHEELS • PULLEYS • MOTOR BASES • BALL BEARING PILLOW BLOCKS, FLANGE UNITS AND TAKE-UP BEARINGS • BABBITTED AND BRONZE BEARINGS • DUCTILE IRON PRODUCTS

Woods

T. B. WOOD'S SONS COMPANY
CHAMBERSBURG, PENNSYLVANIA

ATLANTA • CAMBRIDGE • CHICAGO • CLEVELAND • DALLAS

fore are stronger and last longer in service. **(Circle T-29 on Reader-Service Card)**

Fire Extinguisher

A 2½-lb. dry-chemical fire extinguisher that permits one-hand operation and requires a minimum amount of storage space is being offered by Ansul Chemical Co., Marinette, Wis. **(Circle T-30 on Reader-Service Card)**

Lift Truck

A cushion-tire lift truck equipped with power steering that has a short turning radius has been announced by Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore. **(Circle T-31 on Reader-Service Card)**

Expulsion Valve

A valve that is designed as an automatic tank drain on intermittent air compressors that unload to atmosphere is available from Keisling & Stanley Co., Boylston, Mass. **(Circle T-32 on Reader-Service Card)**

Safety Lock

An electric safety lock for applications as an operator guard on machinery and as door locks for safety and security is available from Lindly & Co., Inc., 248 Herrick Rd., Mineola, N. Y. **(Circle T-33 on Reader-Service Card)**

Control Valve

A multiport three- and four-way, flat-disk-type control valve that allows precise throttling has been developed by W. H. Nicholson & Co., 12 Oregon St., Wilkes-Barre, Pa. **(Circle T-34 on Reader-Service Card)**

Chemical Feeder

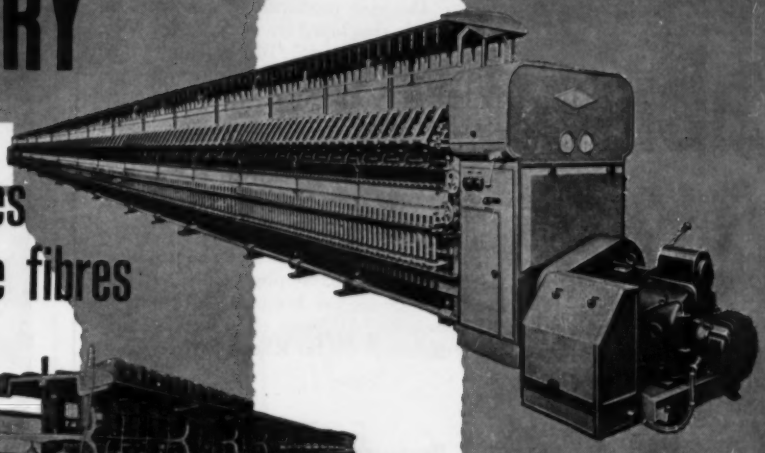
Liquid chemicals can be fed to process at a rate of 0.1 to 4.0 gals. per day by means of a feeder developed by Fisher & Porter Co., 27 Jacksonville Rd., Hatboro, Pa. **(Circle T-35 on Reader-Service Card)**

Data-Processing Machine

A low-cost system of punched-card data processing specially designed for

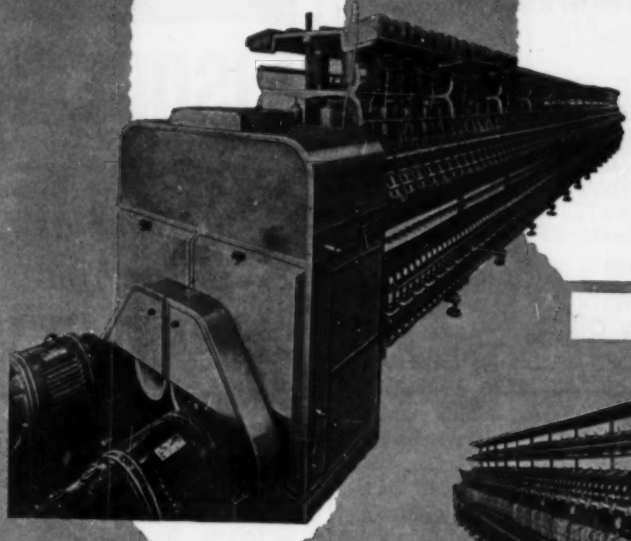
MACHINES FOR THE TEXTILE INDUSTRY

roller spindles
for all textile fibres



Cotton ring spinning frame

Ringtwisting frame for carded wool



Wool ring spinning frame

COGNE

ITALY
TORINO
via s. quintino 28

high quality special steels

COGNE PUBBLICITA 283

Ship fibers fabrics yarns

to principal Textile Centers of the Eastern Seaboard and the Midwest,

VIA

TRUCKING McLEAN COMPANY

Our 25th Year of Service 1934-1959

"We pull for Industry"

TEXTILE DIVISION OFFICES TO SERVE YOU—

- Baltimore
- Boston
- Chicago
- New York
- Philadelphia

For "know-how" service on truck loads *or less*, call McLean today, or write Dept. A, Box 213, Winston-Salem, N.C.

McLean also manages and operates Hayes Freight Lines, Inc., serving the Central States

small business or branches has been announced by Remington Rand Univac Div., Sperry Rand Corp., 315 4th Ave., New York 10, N. Y. **(Circle T-36 on Reader-Service Card)**

Improved Dextrins

Dextrins produced by a process recently developed by A. E. Staley Mfg. Co., Decatur 60, Ill., are said to be more uniform, lighter in color, and cleaner. **(Circle T-37 on Reader-Service Card)**

Portable Stapler

The Model C-F stapler introduced by Container Stapling Corp., Herrin, Ill., closes the bottoms of cartons by inserting king-size clips mechanically. **(Circle T-38 on Reader-Service Card)**

Pressure Control

An explosionproof pressure controller has been marketed by United Electric Controls Co., 79 School St., Watertown 72, Mass. **(Circle T-39 on Reader-Service Card)**

Cutting Oil

An aerosol-jet tapping and cutting oil for hard-to-get-at maintenance jobs involving metal drilling, sawing, and tapping has been developed by Crown Industrial Products Co., 1005 Amsterdam St., Woodstock, Ill. **(Circle T-40 on Reader-Service Card)**

Fork Truck

A fork truck for use in plants and other areas where fork trucks must work both indoors and outdoors is announced by Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich. **(Circle T-41 on Reader-Service Card)**

Muffle Furnace

A muffle furnace with automatic electronic indicator-controller not affected by ambient or voltage changes that speeds up laboratory procedures is available from Blue M Electric Co.,

VISQUEEN TRADEMARK 'Q' FILM

Gives You

CLARITY

"We judge packaging materials by sales figures. Our 'Miracloth' household cleaning cloths move off the racks fast—and move in volume. We're sure that since we switched to VISQUEEN 'Q' film for clarity, the better see-through has spurred impulse buying. Cost? Although VISQUEEN film is the quality polyethylene—more uniform in thickness—it is more economical than other materials. Stylecraft Packaging Service, Charlotte, N. C. fabricates and prints our bags of VISQUEEN film."

Grover C. Culshaw
Product Director
Chicopee Manufacturing Corporation
Milltown, N. J.

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138th & Chatham Sts., Blue Island, Ill. **(Circle T-42 on Reader-Service Card)**

Corrosion-Resistant Bearing

Pyroceram, a glass-ceramic material, is offered as a bearing material satisfactory for use in highly corrosive solutions by Corning Glass Works, Corning, N. Y. **(Circle T-43 on Reader-Service Card)**

Torsion Tear Tester

A heavy-duty testing machine that successfully measures tear strength on strongly directional materials has been marketed by Thwing-Albert Instrument Co., Penn St. and Pulaski Ave., Philadelphia 44, Pa. **(Circle T-44 on Reader-Service Card)**

Chemical-Feed Pump

Most corrosive fluids can be handled at up to 65 gals. per hr. by a pump with a Teflon diaphragm available from Fischer & Porter Co., 28 Jacksonville Rd., Hatboro, Pa. **(Circle T-45 on Reader-Service Card)**

Automatic Weight Checker

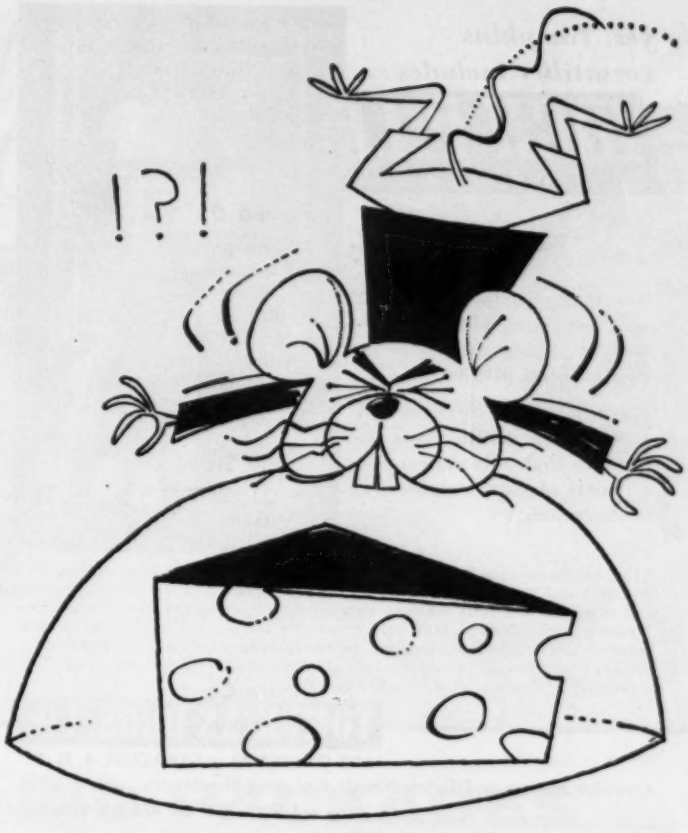
Cartons, boxes, or other packaged items can be accurately checked as to weight at a rate of 40 items per minute on a scale marketed by Toledo Scale Corp., Toledo 12, Ohio. The machine can be fitted to operate reject mechanisms, signals, and trend indicators. **(Circle T-46 on Reader-Service Card)**

Fork Trucks

Three battery-powered, low-silhouette fork-lift trucks capable of double stacking freight in truck trailers have been introduced by Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich. **(Circle T-47 on Reader-Service Card)**

Globe Valve

An impervious graphite globe valve with a nonrotating spindle design that



VISQUEEN 'Q' FILM
TRADEMARK
CLARITY
moves merchandise

VISQUEEN 'Q' film *adds* sparkle to your product. Every detail is crystal clear. No product features are lost. No sales advantages obscured. Printing stays *fast:* No ink rub-off. You get better brand identification. And because VISQUEEN 'Q' film is more uniform in thickness, there are no thin, weak spots. You get a *stronger* package. Breakage is reduced. VISQUEEN 'Q' film will not age or yellow. You get longer shelf life. Write now—or use the information request tag for details on how you can get better packages at less cost.

Information request tag
VisQueen
Trade Mark
clip this tag—#TW9
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VISQUEEN *film—first and foremost polyethylene film. A product of the long experience and outstanding research of PLASTICS DIVISION*
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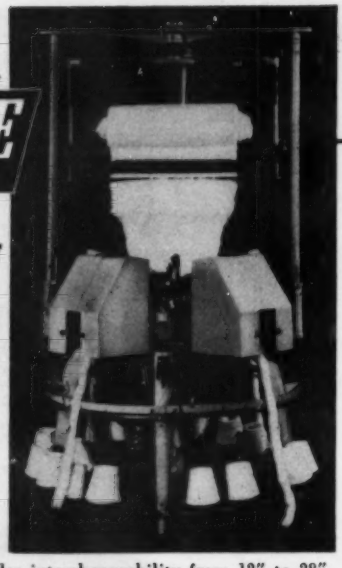
HIGH PILE
FABRIC

at the Industry's Lowest Cost!

Here's the compact, efficient machine you need for money-making, top-quality production of high pile fabric . . .

It's the new TOMPKINS S-1 JUNIOR with carding units to produce high pile material in a variety of sizes, weights and sliver content!



Available in two models with cylinder interchangeability from 12" to 28" (S-1 Jr.) and 24" to 38" (S-1 Sr.), this knitter gives you the proven quality and economy of a fully modern Tompkins circular spring needle machine. Model shown has four high pile cards and feeds, each with stop motion control, and triple stop motions in the knitting mechanism. Features a patented, gearless drive and vacuum air cleaner. *It will pay you to get full information — write, phone or stop in now . . .*

TOMPKINS BROS. CO.
623 ONEIDA ST. • SYRACUSE 4, N. Y.
Circular Spring and Latch Needle Knitting Machinery . . . Since 1846
CIRCLE 256 ON READER SERVICE CARD

Automatic Steam Line Service

Cuts Maintenance Costs
Improves Production

This PSC team automatically delivers maximum heat at minimum cost to your slashers, dry cans, calenders, embossers, and printing and coating machines.

THE UNITRAP* Automatically adjusts to variations in line pressure from 0 to 250 PSI, without changes or adjustments. Delivers maximum temperatures at all times . . . gives you faster warm-up and greater capacity.

THE ROTARY UNION* A precision mechanical rotating seal which requires no mechanical maintenance. It is self-aligning and self-adjusting. Unique siphon support prevents loosening, breaking, or falling off of siphon pipe.

For tops in economy and efficiency, write for Bulletins 700 and 800W
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Baltimore—Buffalo—Camden, N. J.—Chicago—Cleveland—Los Angeles
New York—Providence—Hamilton, Ont.—Montreal—Toronto

makes it easier to seal off the valve packing and is adaptable to motorized automatic operation is being manufactured by National Carbon Co., 535 Fifth Ave., New York 17, N. Y. **(Circle T-48 on Reader-Service Card)**

Monitoring System

A temperature-monitoring system capable of monitoring a virtually unlimited number of points continuously has been announced by Fenwal, Inc., Ashland, Mass. **(Circle T-49 on Reader-Service Card)**

Coating

A coating composed of aluminum, asbestos fiber, and color pigments with a synthetic-oil base for use on old asphalt shingle, felt, metal, and similar roofs is available from United Laboratories, Inc., 16,801 Euclid Ave., Cleveland 12, Ohio. **(Circle T-50 on Reader-Service Card)**

Secondary Level Indicator

Duplicate readings from primary liquid-level indicators are possible with a miniature secondary indicator marketed by Yarnall-Waring Co., 102 E. Mermaid Ave., Philadelphia 18, Pa. **(Circle T-51 on Reader-Service Card)**

Acid-Resistant Mortar

Masonry tank linings can be bonded with an acid-resistant silica mortar developed by Pennsalt Chemicals Corp., Three Penn Center, Philadelphia 2, Pa. **(Circle T-52 on Reader-Service Card)**

Bottle Holder-Carrier

Glass bottles that contain acids or other hazardous chemicals are protected from breakage by a urethane-lined steel protective casing offered by Protectoseal Co., 1920 South Western Ave., Chicago 8, Ill. **(Circle T-53 on Reader-Service Card)**

Heavy-Duty Agitator

A worm-gear drive and heavy construction are featured in an agitator

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BARBER COLMAN

BIG PACKAGES and BIG BEAMS

The development of process machinery to handle larger packages and wind larger beams has introduced important economies in mill operation. See these new ideas in action at Atlantic City. Learn how you can benefit by using these methods in *your* mill.

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SUPER-SPEED WARPERS

Watch the new Barber-Colman Super-Speed Warper and Creel in operation on typical yarns. This great machine is redesigned throughout for better economy, easier operation, and improved performance. In addition, the Barber-Colman exhibit will present many other interesting and up-to-date ideas of substantial value. *Plan now to visit the big show at Atlantic City.*

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The working man in Bristol, Tenn.-Va., gets highest accolades from personnel departments of industries which have located here recently. Educational levels are unusually high and stability and dependability are far above state and national averages.

And Bristolians appreciate industry! Our industrial payrolls have been an integral part of our economy for many years and employee loyalty and capability have been our proudest asset.

There are hundreds of citizens of Bristol, Tenn.-Va., who'd like to be on your industrial team. We'd like you to come down and meet them.

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This nationally famous engineering firm has prepared an exhaustive analysis of Bristol's industrial potential. Write for your copy today—Dept. T959.

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that will carry propellors up to 120 ins. in diameter and is suitable for use in tanks up to 50 ft. in diameter. The unit is available from Denver Equipment Co., P. O. Box 5268, Denver 17, Colo. **(Circle T-54 on Reader-Service Card)**

Faultfinder

A lightweight faultfinder for electrical systems with double earphones covered with foam rubber as standard equipment is offered by Parr Mfg. Corp., 44 Austin St., Newark, N. J. **(Circle T-55 on Reader-Service Card)**

Speed Drives

A line of packaged adjustable-speed drives that operate on the principle of V-belt-connected, adjustable-pitch pulleys has been introduced by General Electric Co., Schenectady 5, N. Y. **(Circle T-56 on Reader-Service Card)**

Overstitching Machine

The Superlock 810 sewing machine available from Willcox & Gibbs Sewing Machine Co., 214 W. 39th St., New York 18, N. Y., features a reverse differential feed that provides flat, straight-hanging seams and perfect stitch patterns on all fabrics. **(Circle T-57 on Reader-Service Card)**

Fire Extinguishers

Two pressurized wet-chemical fire extinguishers designed to stress simplified, self-evident operation are being offered by Walter Kidde & Co., Inc., 675 Main St., Belleville 9, N. J. **(Circle T-58 on Reader-Service Card)**

Color-Evaluating Holder

A spinner-type sample holder makes it possible to evaluate colors more easily on directional-weave fabrics, according to the manufacturer, Instrument Development Laboratories,

your no. 1 source

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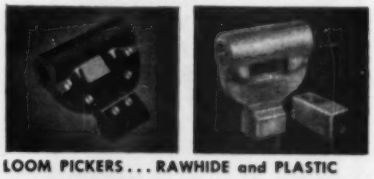

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Also manufacturers of Nylon and Rawhide Hammers and Mallets.

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CIRCLE 257 ON READER SERVICE CARD

Inc., 67 Mechanic St., Attleboro, Mass. **(Circle T-59 on Reader-Service Card)**

Stapler

A pneumatic stapler that closes filled cartons from the outside and sets up empty boxes ready for packing is announced by Container Stapling Corp., P. O. Box 247, Herrin, Ill. **(Circle T-60 on Reader-Service Card)**

Rip Cord for Gummed Tape

A rip cord is applied automatically to gummed tape by means of an attachment to a tape-sealing machine offered by General Corrugated Machinery Co., Palisades Park, N. J. **(Circle T-61 on Reader-Service Card)**

Packaging Adhesive

Solu-Rez, developed by Morningstar, Paisley, Inc., 630 W. 51st St., New York 19, N. Y., provides strong bonds quickly, maintains constant viscosity, will not skin, and is easily washed off packaging machinery. **(Circle T-62 on Reader-Service Card)**

Strap Cutter

A cutter that will cut steel strapping up to ¼ ins. wide and 0.035 in. thick and yet is small enough to slip in the pocket when not in use is offered by Acme Steel Co., 135th St. & Perry Ave., Chicago 27, Ill. **(Circle T-63 on Reader-Service Card)**

Frequency Recorder

A narrow-range-frequency recorder for applications demanding close-frequency checks is available from General Electric Co., Schenectady 5, N. Y. **(Circle T-64 on Reader-Service Card)**

Adhesives

A group of high-strength epoxy bonding agents for cementing cast iron, steel, copper, plastics, and other surfaces to themselves or each other has been developed by Chemical Development Corp., Danvers, Mass. **(Circle T-65 on Reader-Service Card)**

Stitch Lock-off

A lock-off attachment has been added to its Square D NEMA 4 and NEMA 12 enclosures for manual starters by Square D Co., 4041 N. Richards St., Milwaukee 12, Wis. **(Circle T-66 on Reader-Service Card)**

Strapping Tool

A heavy-duty friction-wheel steel-strapping hand tool for use with 1¼x0.031- and 1¼x0.035-in. cold-rolled steel strapping is being offered by Stanley Steel Strapping Div., The Stanley Works, New Britain, Conn. **(Circle T-67 on Reader-Service Card)**

Hydraulic Pump

A variable delivery 5-gals.-per-min. vane pump with an integral-pressure compensator to control pump volume at preselected adjustable pressures is announced by Vickers, Inc., Div. of Sperry Rand Corp., Detroit 32, Mich. **(Circle T-68 on Reader-Service Card)**

Welding Torch

A welding torch that is small enough to weld inside a 3-in. tube and powerful enough to carry 200 amps. on continuous-duty cycles for manual inert-gas tungsten-arc welding is available from Linde Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y. **(Circle T-69 on Reader-Service Card)**

Control Bypass

Manual operation of automatic controllers is possible with a four-way control bypass developed by U. S. Gauge, Div. of American Machine & Metals, Inc., Sellersville, Pa. **(Circle T-70 on Reader-Service Card)**

"WITH LUBRIPLATE LUBRICANTS—NO BEARING LOSS FOR AN ENTIRE SEASON"

so states a well-known manufacturer of Cotton Gin and Oil Mill Machinery

"We have gone to great expense in checking lubricating greases out in the field and find the best to be LUBRIPLATE. Over a season's test we found that out of all the greases tried LUBRIPLATE was the only one that did stand up under all operating conditions throughout a season's run without loss of a single bearing."

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LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

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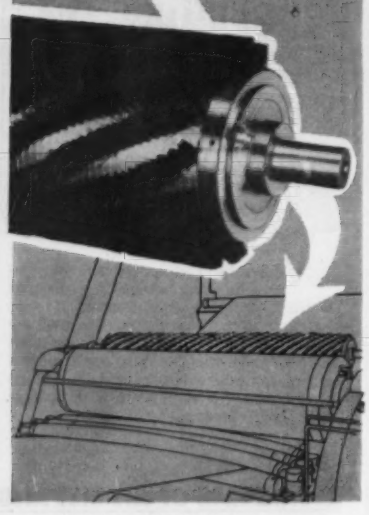
WHY JENKINS' METLKOR® BRUSHES are on JAMES HUNTER SQUEEZE ROLLS



A JAMES HUNTER SQUEEZE ROLL WITH JENKINS' METLKOR BRUSH

James Hunter Machine Co., North Adams, Mass., wanted a brush to stand up when removing acidified flock from their Carbonizer Squeeze Rolls. Jenkins' engineers designed a METLKOR brush with exposed metal parts of stainless steel and bristle of acid-resistant Nylon.

Mr. Frank B. Morrill, Chief Engineer, James Hunter Machine Co., says: ". . . we have been using Jenkins' brushes for flock removal on our Squeeze Rolls for years . . . they do a much better cleaning job than the brush previously used, and stand up several times longer . . ."

This top textile machinery manufacturer has proven the efficiency of Jenkins' METLKOR — the cylinder brush that lasts many times longer and can be re-bristled! If you have any standard or special brush problem, write us today.

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How Density Affects Rubber-Covered Rolls

The density of rubber is a measure of its hardness and is expressed by a number that indicates the resistance of the surface to penetration by a calibrated measuring instrument. The term "density" is commonly used to designate resistance; but technically, "hardness" is the correct term.

There are three commonly used standards of rubber density and all denote the density by number plus the name of the standard, as (1) 50 Plastometer, (2) 25 Densimeter, or (3) 75 Durometer.

To interpret density in terms of a common object, an ordinary auto tire shows the following density readings on the three most commonly used instruments: Plastometer 65 to 80, Densimeter 30 to 35, and Durometer 70 to 60.

Instruments Record in Three Ways

The Plastometer has no hand actuation; the weight of 1 kg. depresses a steel ball, usually of ⅛-in. dia., into the rubber. The scale records the depth of the depression in the rubber, which is read as a number. Each 0.001 in. of penetration is 2.54 points Plastometer reading.

The Densimeter is a hand-actuated instrument with a round-point impresser pin projecting through the bottom of the meter and connected by a spring to the scale pointer. And like the Plastometer, the high number indicates softer rubber. Densimeter readings are roughly one-half Plastometer readings.

The Durometer resembles the Densimeter but is different in that high numbers show greater density and it has a tapered pin instead of a round-point impresser pin.

Density Is Supplied in ± 5 Points

Roll manufacturers can supply a roll in your specified density. For example if you desire a 170 Plastomer density, it can be supplied within ± five points.

This tolerance is necessary because temperature affects rubber; rubber is harder when it is cold and softer when it is hot. Density figures are accurate at 70° F. But since shop temperatures may be anywhere between 60 and 90° F. and are probably seldom at 70°, the tolerance of five points is allowed. But this figure is inconsequential.

However, rolls should not be specified at a density figure taken at extreme temperatures: instead, hardness should be taken at 70° F.

At temperatures above 200° F., natural-rubber rolls are limited. At 250 to 300°, the rolls are approaching or are above the vulcanizing-temperature range and there is danger of altering the rubber chemically and physically. Thus the usefulness of the roll is impaired.

Synthetic Rubber Stops Failures

But failure at high temperatures can be prevented if you use synthetic-rubber coverings.

To prevent brittleness, you must avoid freezing temperatures with all types of rubber. Freezing results in serious cracks, especially in hard rubber. Always let a cold rubber roll come slowly up to room temperature before you apply a load to it.

Increasing the total pressure on a squeeze roll causes greater deformation of the rubber covering and shortens the life of the covering. Pressure of 400 psi. is common today in contrast to 100 to 200 psi. only a short time ago.

But today's pressures cut roll life in half and should not be used unless there's a measurable gain in quantity or quality of product to offset the additional roll cost.

An increase in pressure from 200 psi. to 300 psi., an increase of 50%, is also a rough measure of increased wear on the roll.

An identical increase of 100 psi., this time from 300 to 400 psi., is a further increase of only 33%. However, the first pressure increase of 50% may add 25% to extraction but the second increase of 33% adds only 10 to 15% to extraction. *Rodney Hunt Machine Co.*

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Lockwood Greene's work, originating in 1832, was the design of cotton mills. In the field of cotton textiles, Lockwood Greene has had over 2,400 engagements, and has designed projects totaling almost a half billion dollars in value.

Utica & Mohawk Cotton Mills Division, J.P. Stevens & Co. Inc., Clemson, S. C. Plant

Reputed to be the largest one story, completely air conditioned textile plant in the world, the plant produces sheetings from bale to cloth, with spinning, weaving, sewing and finishing all under one roof.

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Man Made Fiber Table and Yarns

from page 67 to page 110

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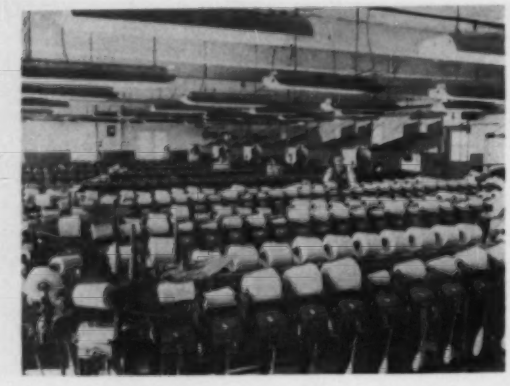

AUTOMATIC CONE OR TUBE WINDERS—for winding all types of spun yarns on cones or tubes for Warping, Dyeing, Twisting, Quilling, Knitting or Sales Packages.

SPECIAL WINDING UNITS FOR KNITTING CONES—include a new slub catcher and a new waxing attachment, which uses standard size commercial wax disks.

LARGE PACKAGES—can be wound up to 11½ inches in diameter for use on shuttleless looms and looms that require a cone supply.

MODEL I AUTOMATIC QUILLER—for coarse count cotton, worsted, wool and other spun yarns, delivers full loom bobbins automatically into boxes, onto pinboards, on wide belt conveyor for inspection of bobbins, or into specially made magazines for automatic loom feeder.

MODEL II HIGH SPEED AUTOMATIC QUILLER (10,000 R.P.M.)—for winding fine count cotton and synthetic yarns of either spun or filament construction.

Also delivers full loom bobbins automatically into boxes, onto pinboards or wide belt conveyor for inspection of bobbins.

Under some conditions one operator can run two or three machines and produce upwards of 2500 full loom bobbins per hour.

ABBOTT FULLY AUTOMATIC RADIAL QUILLER, MODEL II—especially designed for flexibility, is very versatile and particularly well adapted for winding numerous small lots of filling.

Winds coarse or fine count cotton, worsted, wool, rubber and various synthetic yarns, either spun or filament.

Automatic delivery of full loom bobbins onto pinboards, wide belt conveyor for inspection of bobbins, into baskets or other type containers.

Automatic delivery of bobbins can also be supplied whereby full loom bobbins from the individual cones and spindles are delivered into separate containers, which is highly desirable for loom finish yarns and the like.

The Radial Quiller can also be equipped with measured yardage attachments to give accurate, uniform bobbin yardage, as required for two-shuttle looms.

A wide range of spindle speeds from approximately 1000 R.P.M. to 10,000 R.P.M. is obtainable.

One operator can run several machines and thus produce up to 2000 loom bobbins, or more, per hour.

NEWS ABOUT SUPPLIERS

AMERICAN VISCOSE CORP., Philadelphia, Pa.—Has named C. W. Davies assistant district manager of the company's Charlotte, N. C., sales office. . . . **ARNOLD, HOFFMAN & CO., INC.,** Providence, R. I.—Has named Ralph Petree and Edward McLean to the textile-sales staff. Mr. Petree is assigned to the Southeastern territory. Mr. McLean's territory will be announced later. . . . **ATKINSON, HASERICK & CO., INC.,** Framingham, Mass.—Has opened new offices in Pawtucket, R. I., and Greenville, S. C. E. J. McVey is vice president and sales manager in the Pawtucket office, and H. H. Clinch and C. Perry Clanton are district sales managers in the Greenville office. Mr. Clinch will manage sales for Alabama, Georgia, Mississippi, and South Carolina. Mr. Clanton will manage sales for Tennessee, Texas, Virginia, and North Carolina.

FREDERICK L. BISSINGER (left) has been elected to the newly created position of vice president and general manager of Industrial Rayon Corp., Cleveland, Ohio. L. E. DOXSIE (center) has been named manager of A. E. Staley Mfg. Co.'s Corn Div., Decatur, Ill. WESLEY M. GARRETT (right) has joined the Charlotte, N. C., office of Geigy Dyestuffs Div., Geigy Chemical Corp., Ardsley, N. Y.

BUCKEYE CELLULOSE CORP., Memphis, Tenn.—Has named C. A. Montague, Jr., cotton-linter pulp sales manager and E. A. Stafford plant manager of the company's Memphis pulp-manufacturing unit. . . . **CELANESE CORP. OF AMERICA,** New York, N. Y.—Has announced that Fiber Industries, Inc., jointly owned by Celanese and Imperial Chemical Industries Ltd., has been granted a license by E. I. du Pont de Nemours & Co., Inc., to produce and market a polyester fiber in the United States before expiration of the basic patent. Celanese has also announced that Fiber Industries will market Teron by the middle of 1960. . . . **CENTURY CHEMICAL CORP.,** New York, N. Y.—Has acquired controlling interest in Wilson Organic Chemicals, Inc., Sayerville, N. J. Wilson will be operated as a division.

CHEMSTRAND CORP., Decatur, Ala.—Has appointed R. L. Granger as manager of its new nylon-yarn plant at Greenwood, S. C. The company has also promoted H. B. Williams to group leader, textile-products evaluation, in the Applications Research & Service Dept. . . . **CIBA CO., INC.,** Fair Lawn, N. J.—Has appointed Rudolph Berthoud field supervisor for chemical-specialties sales. . . . **CLINTON CORN PROCESSING CO.,** Clinton, Iowa—Has named R. H. Boegel assistant sales manager for primary products. . . . **DIAMOND ALKALI CO.,** Cleveland, Ohio—Has promoted P. I. Johnson product manager of suspensions resins in the Plastics Div. R. E. Mortberg has been named sales representative for the division in the Chicago, Ill., area. . . . **DOW CHEMICAL CO.,** Midland, Mich.—Has promoted L. H. Silvernail to group manager in the company's Coatings Technical Service, in charge of four industry sections, including the textile section. J. P. Strasser is in active charge of the textile section. The company has also announced that plant facilities for production of propylene oxide, propylene glycol, and dipropylene glycol have been completed at its Louisiana Div., at Plaquemine.

E. I. DU PONT DE NEMOURS & CO., INC., Wilmington, Del.—Has started building a multimillion-dollar plant in Beaumont, Tex., for the manufacture of caprolactam. Operations are expected to start by the end of 1960. The company has also announced that A. A. Smith has been named manager of the Textile Fibers Dept.'s technical-service section. . . . **DURANT MFG. CO.,** Milwaukee, Wisc.—Has appointed DeShazo & Associates, Inc., Birmingham, Ala., as its representative in Alabama. Transmission Engineering Co., San Francisco, Calif., has been named representative in the San Francisco area. . . . **EASTMAN KODAK CO., TENNESSEE EASTMAN CO., DIV.,** New York, N. Y.—Will build a new high-purity hydrogen plant at Kingsport, Tenn. The plant is scheduled for completion in late 1959 or early 1960. . . . **FAIRBANKS, MORSE & CO.,** Chicago, Ill.—Will establish a central research and development laboratory at the company's plant in Beloit, Wisc.

LESLIE D. JOHNSON (left) has ben appointed plant manager for Stowe-Woodward, Inc., Newton Upper Falls, Mass. HARRISON M. GORTON, JR. (center) has been appointed Eastern-district sales manager for the Chemicals & Dyestuffs Div., Koppers Co., Inc., Pittsburgh, Pa. CHARLES A. ADAMS (right) has ben appointed division manager for Chainveyor Corp, Los Angeles, Calif.

FOXBORO CO., Foxboro, Mass.—Has named R. F. Sutton branch manager in Philadelphia, Pa., and T. A. Jones branch manager of the Atlantic, Ga., office. F. H. Leathers has been named regional engineer for the Southeastern states. G. W. Howlett has been named sales engineer at Pensacola, Fla., and L. L. Hodges has been named sales engineer in Mobile, Ala. . . . **GENERAL ANILINE & FILM CORP., ANTARA CHEMICALS DIV.,** New York, N. Y.—Has appointed Atlanta Solvents & Chemical Co., Doranville, Ga., distributor for Igepal CA and CO nonionic surfactants, Cheelox sequestering agents, and ethylene and diethylene glycols. . . . **GENERAL MILLS, CHEMICAL DIV.,** Kankakee, Ill.—Has named David Brodess to the division's technical-service department. . . . **GENERAL TIRE & RUBBER CO.,** Akron, Ohio—has completed a $350,000 expansion of its plant at Mogadore, Ohio.

GULF OIL CORP., Pittsburgh, Pa.—Has moved its sales office for petrochemicals to New York City. . . . **HARTFORD FIBRES CO.,** New York, N. Y.—Is the new name of Hartford Rayon Co., Div. of Bigelow-Sanford Carpet Co., Inc. . . . **LIVINGSTON & HAVEN, INC.,** Charleston, S. C.—Has announced that the U. S. Patent Office has granted Patent No. 2,890,841 for the Long pneumatic silver-lap-control system developed by R. D. Long, Shuford Mills, and A. C. Flint, vice president of Livingston & Haven. . . . **METRO-ATLANTIC, INC.,** Centredale, R. I.—Has named Ray Steeves to the sales and technical staff. He will work out of the main laboratories in Centredale. . . . **MIDLAND-ROSS CORP.,** Cleveland, Ohio—Has named R. J. Jacobs generai manager of its subsidiary, John Waldron Corp., New Brunswick, N. J., and of its Hartig Extruder Div., Mountainside, N. J.

MONSANTO CHEMICAL CO., St. Louis, Mo.—Has announced that expansion of its silica-production plant in Everett, Mass., has been completed. Barton MacDonald has been promoted to assistant district manager with headquarters in Philadelphia, Pa., for the company's Inorganic Chemicals Div. The

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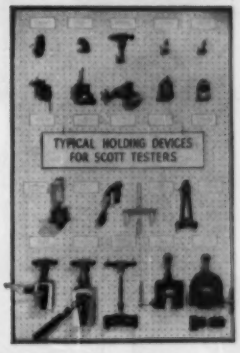
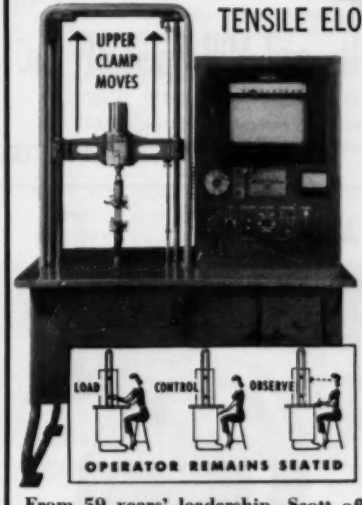
Holding Devices as needed for conformance with ASTM, ISO, and Industry Test Methods are available on the...



BRAND NEW SCOTT CONSTANT RATE-OF EXTENSION TENSILE ELONGATION TESTER



The universal applicability of the new CRE tensile tester cannot better be appreciated than by considering the unequalled variety of holding devices it utilizes. No other tester offers ultra-precise electric weighing in such complete conformance with accepted methods of test for textiles, rubber, plastics, including tear, lamination, burst and seam construction up to 1,000 lbs. tensile.

From 59 years' leadership, Scott offers this new tester of highest known precision . . .

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MODEL 31 AD Piece-end Sewing with SAFE Retractable Pins

20" dia. cloth wheel with 6 pairs of pins retracted by cam for automatic cloth stripping. Retracted pins are safe. Heavy duty gear type sewing head. Single chain stitch. Wide range of stitch adjustments. Motor Drive.

DINSMORE MANUFACTURING CO.

Box 267 Salem, Mass.

company has also announced that Texize Chemicals, Inc., Greenville, S. C., has been licensed to manufacture Sterox 21-K. Texize will also distribute the product. . . . **MORETEX CHEMICAL PRODUCTS, INC.,** Spartanburg, S. C.—Has appointed Dr. D. A. Bixler research director. . . . **NATIONAL DRYING MACHINERY CO.,** Philadelphia, Pa.—Has named Hayes Textiles, Inc., Spartanburg, S. C., Southern sales agent.

JAMES K. AMES (left) has been appointed to the newly created position of manager of field sales for Colton Chemical Co., a division of Air Reduction Co., Inc., Cleveland, Ohio. FRANCIS W. HANSELL (center) has been named to the Philadelphia, Pa., district sales staff of Synthane Corp, Oaks, Pa. He will cover greater Philadelphia and Southern New Jersey. DONALD R. ROBERTSON (right) has been transferred to New York City as district sales manager for Taylor Fibre Co., Norristown, Pa.

NOPCO CHEMICAL CO., Newark, N. Y.—Has named Dr. J. E. Ward resident manager of Nopco Chimie S. A., Fribourg, Switzerland. A. H. Stuewe succeeds Dr. Ward as technical manager of the company's Foreign Department—Industrial. . . . **PARROTT & BALLENTINE, INC.,** Greenville, S. C.—Has been named exclusive sales agent in the United States for Fiber Controls Corp., Gastonia, N. C. . . . **WM. RABINOWITZ & SONS,** Allentown, Pa.—Has leased 172,000 sq. ft. of space in the former Ludlow Mfg. & Sales Co. building. The company will enlarge its machine-shop facilities for manufacturing new ribbon looms as well as reconditioning textile machinery. . . . **SKF INDUSTRIES, INC.,** Philadelphia, Pa.—Has appointed W. L. Rhodes regional marketing analyst for the Midwestern sales region. Kenneth W. Seton has been named manager of the sales-contract department of the company. H. D. Hineman has been named field engineer in the Pittsburgh, Pa., sales office. . . . **SACO-LOWELL SHOPS,** Boston, Mass.—Has promoted J. W. Hubbard to vice president in charge of sales for the company's Textile Machinery Div. His headquarters will be in Easley, S. C.

SEYDEL-WOOLLEY & CO., Atlanta, Ga.—Has announced that W. L. Whisnant, district sales manager of the Carolinas Div., has retired. . . . **MORRIS SPEIZMAN CO., INC.,** Charlotte, N. C.—Has bought an adjoining building in order to expand its manufacturing and engineering departments. . . . **A. E. STALEY MFG. CO.,** Decatur, Ill.—Has promoted J. P. Bolas to assistant manager of the Philadelphia, Pa., office. R. E. Smith has been transferred from the Boston, Mass., office to the Chicago, Ill., office, succeeding Mr. Bolas. J. W. Lusk, Jr., has been transferred from Philadelphia to Boston. . . . **STEIN, HALL & CO., INC.,** New York, N. Y.—Has named T. E. Snyder to its Charlotte, N. C., branch sales office. He will service gray mills in the Carolinas.

REYNOLDS METALS CO., Richmond, Va.—Has named G. A. Rutledge chief packaging-application engineer, succeeding J. R. Chapman, who has resigned. . . . **STEEL HEDDLE MFG. CO.,** Philadelphia, Pa.—Has moved its bobbin plant in Greensboro, N. C., to its Southern Shuttles Div., Greenville, S. C. . . . **VAN NORMAN INDUSTRIES, INC.,** New York, N. Y.—Has named James N. F. Reynolds, Jr., vice president in charge of manufacturing. . . . **WHITIN MACHINE WORKS,** Whitinsville, Mass.—Has named E. M. Kennedy vice president and director of Whitin of Canada Ltd.

NEWS ABOUT MEN

Julian T. Baker has been elected president and chairman of the board of Virginia Mills, Inc., Swepsonville, N. C. He had been executive vice president.

Raymond C. Baker has joined the staff of Man-Made Fiber Producers Association, Inc., New York, N. Y., as assistant to the president.

Burton Blagman has been named assistant director of chemical development for Malden Mills, Inc., Lawrence, Mass. He was formerly associated with Princeton Knitting Mills, Watertown, Conn., as a developmental chemist.

Jerome P. Bolger has been named to the newly created post of executive vice president of Rhodhiss-Pacific Mills, New York, N. Y.

George H. Boynton has been elected a vice president of new developments at Deering Milliken & Co., Inc., New York, N. Y.

Arthur T. Branigan has been appointed general superintendent of manufacturing of Berkshire Hathaway, Inc., Providence, R. I., and will be in charge of the company's plants in Massachusetts and Rhode Island.

Jennings Campbell has been named project-development chemist at Abbeville Mills Corp., Abbeville, S. C.

June H. Cheek has been named superintendent of Aleo Mfg. Co., Rockingham, N. C., succeeding Winder Gary, who is retiring.

Archie K. Davis has been named to the board of directors at Virginia Mills, Inc., Swepsonville, N. C.

Roy E. Dellinger has been appointed general superintendent of Amazon Cotton Mills, Thomasville, N. C.

Norman Duberstein has been appointed executive vice president of Raeford Worsted Corp., Raeford, N. C.

Michael M. Devcich has been named executive vice president of Pacific Mills Worsted Co., division of Pacific Mills, Greensboro, N. C.

Frederick Ellis has been named assistant superintendent of cotton finishing at American Thread Co.'s Willimantic Mills, Willimantic, Conn.

Edward M. Edwin has been named president and secretary of E. M. E. Mills, Inc., New York, N. Y.

Paul M. Felker, Jr., has been named quality-control manager of three Georgia plants of The William Carter Co., Needham Heights, Mass.

B. C. Grogan has been promoted to superintendent

GEORGE L. STAFF (left) has been named president of Raeford Worsted Corp. and Pacific Mills Worsted Co., succeeding Ely Callaway. GEORGE H. MCLOOF (right) has been appointed executive vice president of Mooresville Mills, Greensboro, N. C., in charge of sales and merchandising.

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MAKES A CUTTER
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Every Cutting Need

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This Taylor-Stiles Cutter will cut Orlon and other synthetic waste into lengths from 1" up to 24", hour after hour, week in and week out, with absolute accuracy and minimum knife maintenance.

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West Coast Office: SCHERR-TUMICO CO. 3337-39 West Olympic Blvd. • Los Angeles 19, Cal.

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INDUSTRIAL ENGINEERS

• MODERNIZATION PROGRAMS • PLANT LAYOUTS
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• COST REDUCTION REPORTS
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Specializing in Textiles Since 1914

NEWS ABOUT MEN Continued

of the thread department of Pisgah Mills, Inc., Brevard, N. C.

Clark Hayden has been named general manager of Waumbec Dyeing & Finishing Co., Manchester, N. H.

R. E. Hamilton has been elected executive vice president of the Tufted Textile Manufacturers Association.

Fred Hofmann has been appointed vice president of Raeford Worsted Corp., Raeford, N. C. Mr. Hofmann will be in charge of the company's styling and fabric-development department.

Sam Hunter has been named manager of the Blacksburg, S. C., plant of Dodgeville Finishing Co.

Dan Hurst has been named general manager of manufacturing of Candlewick Yarn Mills, Chattanooga, Tenn.

K. Bruce Jackson has been appointed assistant to the president of Allen Knitting Mills, Inc., New York, N. Y.

Al Kendall has joined Bachmann Uxbridge Worsted Corp., Uxbridge, Mass., as a stylist in the woolen department.

William M. Klothe has been named president of Pellon Corp., New York, N. Y.

Paul G. Krueger has been elected president of Plymouth Cordage Co., New Bedford, Mass., and its principal subsidiaries, succeeding Edwin G. Roos, who is retiring.

James R. Lathan has been named a vice president of Hess, Goldsmith & Co., Inc., New York, N. Y. He has also been named divisional manager of glass-fiber fabric manufacturing and finishing.

John T. Lathem has been appointed superintendent of Pisgah Mills, Inc., Brevard, N. C.

R. A. Liner has been named general manager of the Matthews plants and the Harris plant of Greenwood Mills, Greenwood, S. C.

James A. Lybrand, Jr., has retired as vice president of J. P. Stevens & Co., Inc., Greensboro, N. C.

Edward C. McCusker has been appointed plant manager of Jonell Chemical Corp.'s dyeing and finishing plant, East Taunton, Mass.

Henry A. Millis has been named vice president of Burlington Hosiery Co., Greensboro, N. C., and will be in charge of the men's and children's hosiery division. His headquarters will be in Asheboro, N. C.

Joe D. Moore has been appointed vice president in charge of textile manufacturing and finishing at Reeves Bros., Inc., New York, N. Y.

P. E. Morrill has retired as vice president of Bemis Bro. Bag Co., St. Louis, Mo.

Paul W. Nipper, Jr., has been named manager of the Borden Plant of J. P. Stevens & Co., Inc., Kingsport, Tenn.

George Olsen has been named a vice president of Pacific Mills Worsted Co., a division of Pacific Mills, Greensboro, N. C.

J. William Perras has been appointed plant manager of Fairhaven Mills' new plant now under construction at Pickens, S. C.

Edward H. Stall has been promoted to general superintendent of four cotton mills of J. P. Stevens & Co., Inc., in South Carolina. The mills are the Apalache Plant, Greer; the Jonesville Plant, Jonesville; and Piedmont Plants No. 1 and 2, Piedmont.

Edward T. Richards has been named manager of Peerless Woolen Mill, Tifton, Ga.

J. Clyde Simmons has been named plant manager at Kingsley Mill Corp., Thomson, Ga.

Garoland Sligh has been promoted from plant engineer of Callaway Mills Co.'s Hillside Mills, LaGrange, Ga., to overseer of wool carding and spinning.

Clarence M. Smith has been elected president of Phoenix Silk Corp., Allentown, Pa.

Clifford E. Smith has been named to the new position of production coordinator and cloth-purchasing manager of

The Kendall Co.'s Kendall Mills Div., Boston, Mass.

John Smith has been elected president of Chicopee Mfg. Corp., and Chicopee Mills, Inc., New Brunswick, N. J.

A. C. Stewart has been elected treasurer of Collins & Aikman Corp., New York, N. Y., succeeding Charles M. Willon.

J. H. Stursberg, president of Livingston Worsted Mills, Holyoke, Mass., has been named chairman of the executive committee of the board of directors, National Association of Wool Manufacturers. Mr. Stursberg succeeds John H. McGowan, Wyandotte Worsted Co., Waterville, Me., who continues as a vice president and committee member.

A. C. Taylor has been named superintendent of J. P. Stevens & Co.'s Apalache Plant in Greer, S. C.

Leigh Taylor has been named assistant to Basil D. Browder, executive secretary of Dan River Mills, Inc., Danville, Va.

Harry W. Thener has been named to the board of directors of West Georgia Mills, Whitesburg, Ga.

Arthur Todd has been named assistant overseer of treating at Excelsior Mills' Plant No. 2, Clemson, S. C.

Dr. Dan B. Wicker has been promoted to vice president in charge of research and development for Huyck Felt Co., a division of F. C. Huyck & Sons, Rensselaer, N. Y.

Mrs. Dean Williams has been named plant stylist for Lyman Printing & Finishing Co., Lyman, S. C.

J. Wilbert Wood has retired as vice president of J. P. Stevens & Co., Inc., and as general manager of the Greenville and Rock Hill Groups of the Cotton Div.

Joseph H. Wright II has been placed in charge of manufacturing and distribution of full-fashioned and seamless hosiery for Chadbourn-Gotham, Inc., Charlotte, N. C.

Textile World

OBITUARY

John P. Batson, 56, president of Batson Mfg. Co. and John P. Batson Co., Greenville, S. C.

John Ernest Dillard, 49, overseer, Southern Bleachery & Print Works, Taylors, S. C.

H. T. Goss, former superintendent of Durham Hosiery Mills, Durham, N. C.

Kay C. Jones, 45, promotion coordinator for J. P. Stevens & Co., Inc., New York, N. Y.

James L. Morrison, 85, president of Morrison Machine Co., Paterson, N. J.

Homer L. Pruitt, 75, retired general manager of Haynsworth Plant, Woodside Mills, Anderson, S. C.

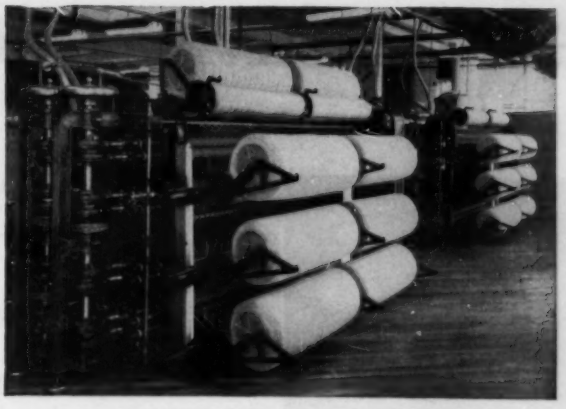
Belding Barnes Slifer, 95, retired textile manufacturer, Philadelphia, Pa.

Elijah Kent Swift, 80, chairman of the board of Whitin Machine Works, Whitinsville, Mass.

Lewis Weiner, 81, president of Texstyle Corp., Clifton, N. J.

Paul Whitin, 82, retired chairman of the board of Paul Whitin Mfg. Co., Northbridge, Mass.

Harry J. Wright, 86, former president of Mayfield Woolen Mills, Mayfield, Ky.



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Built in 48", 60", 72" widths for adaptation to all carding machines. Write for information.

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WARPING—WEAVING—WINDING—KNITTING—TUFTING
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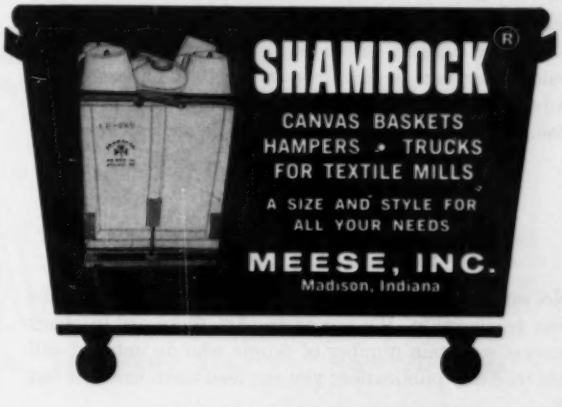

How Textile World Circulation

Advertisers today are asking for more and more evidence on which to base their media decisions. This is a healthy attitude that we heartily encourage.

One subject on which we are often queried is circulation. From time to time, therefore, I believe it is helpful for us to restate and re-emphasize Textile World's basic circulation philosophy.

I am consequently using this method of frankly answering some questions that have been asked by agencies and advertisers.

O. W. Thomas

PUBLISHER

1.

Why does Textile World believe so strongly in paid circulation?

Fundamentally, because payment for a product represents the normal and natural way of doing business. Agencies sell their services, advertisers sell their products. The general magazines and newspapers of this country are sold, to subscribers or on newsstands. We're no different from these agencies, advertisers and other media. We simply share their belief in the cardinal rule, "If something has value it can be sold."

2.

Does paid circulation guarantee readership?

No. Payment for a subscription, however, certainly indicates an intent to read. The subscriber expresses this intent in the simplest and most universally recognized form—money. Having expressed it, he retains full freedom of choice. If he doesn't read the publication, he won't continue to pay for it.

Further evidence of readership of a publication by its paid subscribers is contained in a recent Laboratory of Advertising Performance study. (Laboratory of Advertising Performance Sheet 1195 will be sent on request.)

3.

Can paid circulation really provide "100% market coverage"?

No, especially if you interpret coverage as readership, not just receivership. We recognize that there are in every market a certain number of people who do not and will not read any publication; you can lead them to water but you can't make them drink. Nobody is going to get their attention as readers.

There is another group of people who can be reached only by McGraw-Hill's type of vigorous, persistent circulation selling activity. By direct mail, our own field salesmen, and by issue cards, we uncover many of the "hidden buying influences" who are important to market coverage, but who are not listed in directories or registration rosters.

McGraw-Hill publications provide representative, selective circulation in the markets they serve. Both the quantity and the quality of the subscribers are identified by actual audit of paid transactions. This provides the advertiser with documented answers to two basic questions about the audience he is buying: "Who are these people?" "How many of them?"

4.

Does paid circulation guarantee "editorial quality"?

In our view, "editorial quality" is measured directly by the publication's usefulness to the reader. If the editorial content does not match his job interests, serve his needs, help solve his problems and compel his continuing attention, it is not of real use.

If it isn't useful, he will neither buy the publication nor read it.

Paid circulation means that we have accepted the challenge of placing our editorial services on the block. We have given every reader the option of deciding on the value of this editorial service to *him*. He casts his ballot, for or against, when he first subscribes and every time he comes up for renewal.

Editorial quality, or usefulness to the reader, thus is judged, not on a theoretical basis, but on the hard fact of a "sale" or "no-sale" decision by the publication's audience.

Policies Benefit Advertisers

5.

Doesn't it cost more to sell subscriptions than to give them away?

It is possible that, on some publications, selling costs may temporarily exceed subscription income. Usually this is because of circulation growth factors involved in the sale of new subscriptions. However, the economics of paid circulation are not based on selling new subscriptions only, but on the lower cost of renewals as well.

For example, over the last ten years, McGraw-Hill publications have collected more than $42,700,000 in subscription fees. The total of all expenses involved in the procurement (sales and collection) of these subscriptions amounted to just over $34,700,000. This gave us a subscription sales margin of about $8,000,000, plus the valuable privilege of mailing under second class postage rates. The subscriber, therefore, has shared in the costs of our publishing operation.

6.

Doesn't paid circulation mean that you have to accept all subscriptions, regardless of quality?

Not at all. Subscriptions are solicited and accepted only from people who meet the circulation *specifications* set by each publication. These standards are clearly defined, and can be examined by any interested advertiser or agency. These standards result in audiences of men who benefit from the publication's editorial contents and whose buying power benefits the advertiser.

We make clear in the masthead of each publication that we do not offer the publications to everyone who wants to subscribe. On the average, we decline about 20,000 subscriptions a year from people who, based on our specifications, would not benefit from receiving the publications. (Current listings of subscriptions recently declined are available on request.)

In addition, the nature of our publications' editorial contents, and the subscription payments screen out people who do not meet circulation specifications.

7.

Is it true that some people don't pay for their own subscriptions?

In some cases, yes. A study of our subscribers shows that 17.3% of subscriptions are ordered and paid for by the company. Another 32.7% are paid for by the company, but requested by the individual. The remaining 50.0% are paid for by the individual subscriber himself. So, 82.7%* of the subscriptions are delivered on the request and initiative of the individual. As to the remaining 17.3%, the company that buys for its key employes undoubtedly makes sure of the usefulness of the publication —particularly since it has to be renewed periodically by the payment of company funds.

8.

What does paid circulation mean to the advertiser?

Many things. But most directly and most importantly it means more evidence, and better evidence, as to publication values. Namely:

- Evidence of active interest in the publication, as represented by payment for a subscription.
- Evidence, in the same tangible form, of an *intent* to read the publication.
- Evidence of editorial quality, as represented by the interest and intent referred to above.
- Evidence of the reader's true evaluation of the usefulness of the publication, as represented by payment for renewal subscriptions.
- Evidence of active circulation, as represented by subscriber action in correcting and keeping up-to-date circulation lists.

**Figures from Laboratory of Advertising Performance, Sheet 1114, will be sent on request.*

This, of course, is not the complete story. Intangible benefits accrue from circulation policies based on the sound initial premise that the subscriber must be served first. Paid circulation, although an integral part, is certainly not the only ingredient of our publishing philosophy. We hope, however, that the foregoing answers have been of value in clarifying our position on this vital part. If you have further questions, won't you please contact your local McGraw-Hill representative? Or write directly to us.

Textile World

McGRAW-HILL PUBLISHING COMPANY, INC., 330 WEST 42nd ST., NEW YORK 36, N. Y.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: "OPPORTUNITIES" :EQUIPMENT
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Individual Spaces with border rules for prominent display of advertisements.

The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

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An advertising inch is measured ⅞" vertically on one column, 3 columns—30 inches—to a page.

$1.50 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Positions Wanted take one-half of above rate.

Box Numbers in care of our New York, Chicago & San Francisco offices count as one additional line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

October issue closes September 16, in N. Y.

ADDRESS BOX NO. REPLIES TO: Box. No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

TEXTILE ENGINEERS

A large producer of synthetic fibers is expanding its efforts in Textile Research and has several openings in its Research and Engineering Division. College graduates with 0-10 years textile experience will be considered.

One position will require some experience in the utilization to greatest advantage of particular properties of given fiber in specific end use applications.

In other positions experience in synthetic yarn knitting or weaving or in the processing of synthetic staple fibers would be desirable.

Pleasant working and living location near Asheville, N. C. Excellent benefits; five-day work week; moving expenses. Send complete resume, including salary requirements, to Employment Manager, Enka, N. C.

AMERICAN ENKA CORPORATION
Manufacturers of Rayon and Nylon

UNUSUAL OPPORTUNITY

for aggressive man to make permanent career starting as

TEXTILE MACHINERY TECHNICIAN

with progressive, medium-size machinery manufacturer. Extensive travel from N.Y.C. office in U.S. and Canada to trouble-shoot as well as supervise installations.
College graduate between 25 and 30 preferred, mechanical inclination essential. Min. 3 mos, mill training period. Unusual benefits for right man. Confidential.

P-2374, Textile World
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

TEXTILE ENGINEER

Established firm of Consulting Engineers in New York City has an opening for an experienced textile engineer.

A graduate of a recognized textile school with a minimum of 8 years experience in textile mills and plant layouts is preferred but consideration will be given to applicants with a minimum of 12 years experience in cottons, woolens and synthetics.

Please supply complete personal data and detailed experience record with expected salary in applying.

P-2341—Textile World
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Cotton Piece Goods
DYER TECHNICIAN WANTED

Dyer Technician wanted for position in Finishing Plant in Manila, Philippines. Man wanted must have 5-10 years experience in running Dyeing Department, doing Pad Dyeing and Jig Dyeing of Vat, Sulphur, Direct and Napthols. Age 35-45 years, contract and transportation guaranteed.

P-2279, TEXTILE WORLD
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

MILL EXECUTIVE WARP KNITTING

Dynamic man with some experience in fields of warp knitting, dyeing and finishing. Familiar with mill administrative and personnel direction for position in expanding plant upstate N. Y.

P-2272 Textile World
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

POSITIONS VACANT

Weaver, experienced narrow fabrics with mechanical ability. Small metropolitan New York mill, good future. State age, experience. P-2277, Textile World.

Woolcombing foreman required for overseas combing plant. Must be fully experienced French and noble. This is a well paid and progressive opportunity. All applications will be treated in the strictest confidence with interviews in Bradford. Full particulars present position, experience, age, education and family in first instance to P-2468, Textile World.

Wanted shift foreman for Warner Swasey weaving. Worsted and Blend operation. Job in southeast. Replies held in strict confidence. Send resume to P-2450, Textile World.

Wanted shift foreman for worsted spinning and twisting operation. Job in southeast. Replies held in strict confidence. Send resumes to P-2453, Textile World.

SELLING OPPORTUNITY OFFERED

Ambitious, high-calibre man between 35 and 40 years wanted by established chemical manufacturer in Philadelphia to sell our line to textile, paper and metalworking plants in North Carolina. Past chemical training unnecessary. We will pay salary and expenses during training period. The successful applicant will eventually become an important direct agent with a good income. Reply in detail to Harry Miller Corp., 4th and Bristol Sts., Phila. -40, Pa. Your reply confidential.

POSITIONS WANTED

Controller-Accountant 34, heavy textile experience, energetic, creative fully responsible. PW-2333, Textile World.

Woolen Spin. Over. 31 yr. old. 12 yrs exp. in fine & coarse ctr. Exceptional ed. & mechanical background. PW-2326, Textile World.

Production Mgr. or Superintendent. Heavy experience yarn thru weaving colored combed cottons and synthetics. Strong on cost, standards, and quality. Proven ability to build organization and plant into competitive units. Presently employed. Desire position with more challenge. PW-2421, Textile World.

Textile engineer heavy experience in research-development quality control and testing of materials. Challenging position in research-development or quality control. PW-1881, Textile World.

Available for domestic or foreign. Overseer of weaving or supt. of weaving. Ten years experience. Practical man and I.C.S. Graduate weaving sleshing and warping. Rayon or cotton plain or fancy. PW-2427, Textile World.

Weave room second hand or C & K W.3. Loom fixer wants job. Sixteen years experience on wool and worsted. PW-2425, Textile World.

Textile School Graduate (Zurich, Switzerland) with five years experience in narrow and broad fabrics (plain and jacquard), speaking fluent English, Spanish, German and French, seeks position with good future. Resume sent on request. Confidential. Now employed. Write: P.O. Box 662—Manchester, N. H.

Textile Cost Accountant, Experienced; Standards. Systems, Controls; Relocate or travel. PW-1882, Textile World.

Cotton Piece Goods
PRINTER-COLORIST WANTED

Printer-Colorist Technician wanted for position in Finishing Plant in Manila, Philippines. Man wanted must have had 5-10 years experence in running small Roller Printing Department and small Color Shop. Must have good knowledge in Printing Pigment Emulsions, Azoics, Vat Colors, and Discharges. Age 35-50 years, contract and transportation guaranteed.

P-2280, TEXTILE WORLD
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Commission Spinner Wanted

To Spin ⅞ Run Wool Yarn
Steady Volume Basis

P-2403, TEXTILE WORLD
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

COUNTING DEVICES

Active Rep. organization wanted in Southern States for one of the leading lines of counting devices in the world. Selling on commission basis. Capacity and experience to deal with other industries, especially electronics, desirable. Write with resume to

Box RW-2262, Textile World
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280—Deliveries Saco-Lowell Control Draft Drawing, Model #5, 256—lap back, 24—Can back—1947
6—Saco-Lowell 12x6 Roving Frames, 84 spindles, 10¼″ gauge
36—Saco-Lowell 10x5 Roving Frames, J3 Long Draft; 23—8″ gauge, 108 spindles; 13—7½ gauge—100 spindles,—1946-1947.

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31—Saco-Lowell, Shaw S-2 Long Draft, 3¼″ gauge, 312 spindles, New Era spindle, 9¼″ bobbin, 7½ hp motors, 1950-2
20—Saco-Lowell Roth R-2 Long Draft, 3½″ gauge, 240 spindles, New Era Spindle, 9½″ paper bobbin, 7½ hp motors, 1946
120—Whitin Model F, Casablanca Long Draft, 3″ gauge, 66 frames—272 spindles, 54—frames—256 spindles; tape drive.
38—Saco Lowell, Casablanca Long Draft, 3¼″ gauge, 232 spindles, tape drive.

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YARN DYEING

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2—Smith Drum Package Dye Units, stainless, 1—500 lbs., 1—250 lb.
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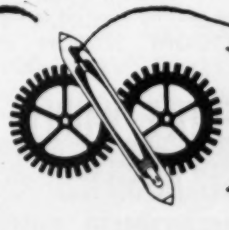
60—Draper Model X2 Auto. Looms, 42″, 2-5 harness, 8¾″ bobbin, 1950
80—Draper Model XP Auto. Looms, 60″, 1948-50
20—Draper Model X Auto. Looms, 60″ cam, 1940
24—Draper Model XK Auto. Looms, 40″ dobby—1938
138—C & K Auto. Looms, 40″, 4 x 1 box, 20 harness



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